Government Decision-Making and Environmental Degradation:

A Study relating to Mining Activities in Papua New Guinea

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STATEMENT OF ORIGINAL AUTHORSHIP

I declare that this thesis is my own account of my research and contains as its main content work which has not been previously submitted for a degree at any tertiary educational institution.

I also declare that this thesis is my own composition and, to the best of my knowledge, any assistance received in its preparation and all sources used have been duly acknowledged.

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LIST OF ABBREVIATIONS

ADB Asian Development Bank
ANU Australian National University
AusAID Australian Overseas Aid Programme
BHP BHP Limited (later BHP Billiton Ltd.)
BRA Bougainville Revolutionary Army
CIA United States Central Intelligence Agency
CSIRO Commonwealth Scientific and Industrial Research Organisation of Australia
ECA Environmental Contaminants Act 1978 of PNG
ECP Enhanced Co-operation Package
EPA Environmental Planning Act 1978 of PNG
IIED International Institute for Environment and Development
IMF International Monetary Fund
K Kina, PNG's unit of currency
LMC Lihir Management Company Limited
MDC Mining development contract
MPI Mineral Policy Institute
MTDS Medium Term Development Strategy
MWMP Mine Waste Management Project - Risk Assessment
NGO Non-Government Organisation
OECD Organisation of Economic Co-operation and Development
OTML Ok Tedi Mining Limited
PEAK Porgera Environmental Advisory Komiti
PJV Porgera Joint Venture
PNG Papua New Guinea
SPREP South Pacific Regional Environment Programme
STD Submarine Tailings Disposal
UNESCAP United Nations Economic and Social Commission for Asia and the Pacific
WANTOK PNG members of the same tribe or clan who speak the same language
ABSTRACT

Papua New Guinea (PNG) is a country possessing abundant resources of gold, oil, copper, timber, and fish stocks. It is hampered in its development and management of these resources, however, by serious problems of governance and corruption. These problems are evident throughout the economy and also in the management of the environment. The level of environmental damage caused by the mining industry in PNG is now such that it will require extensive rehabilitation, if the areas affected can, indeed, ever be fully rehabilitated. The mining companies which precipitated this damage were licensed and encouraged by the PNG Government in the initiation and exercise of the mining operations. The resulting environmental impact has affected the lives of thousands of New Guineans to their detriment. The degradation caused remains unredressed.

Compounding the problem, there is a growing reliance by Papua New Guinea on mineral exploitation for foreign direct investment, government revenues, and foreign exchange. Gold exports accounted for the biggest share of export revenues in 2002 representing 37.5% of the total. In light of this growing dependency on mining activities, there is a correspondingly urgent requirement to address the deficiencies in the administrative, monitoring, and policing aspects of the protection of its environment.
Despite the public evidence of the damage to the environment and the ensuing affect on the people of Papua New Guinea by mining activities; and despite universal condemnation of these activities and the companies responsible; the companies continue to conduct these activities without official hindrance and with little apparent concern for the long-term ramifications of their actions.

This thesis will examine the degradation resulting from the mining activities of companies in Papua New Guinea over the last three decades – particularly those of Placer Dome’s Porgera gold mine, BHP’s Ok Tedi gold and copper mine (the waste from both of which is dumped into the Ok Tedi and Strickland rivers which are tributaries of the Fly River and form part of the Fly River system) and Lihir Gold Limited's gold mine on Lihir Island. It will examine the extent to which the Government of Papua New Guinea may have wittingly (in the sense of a prescience as to the possible or probable likelihood of deleterious impact) or unwittingly contributed to that degradation as a result of its actions or omissions.

Studies of available literature suggest that there has been little attention paid to the subject of culpability on the part of successive PNG governments in matters of environmental damage. This research will contribute to reducing this gap in the literature by focusing on possible motives of the PNG government and its actors which precipitated those
decisions and which resulted in environmental degradation. The discussion will examine the likely motivation of the PNG government in its deliberations and decisions and the extent to which corruption and incompetence may have played a role.
Chapter 1  Introduction: Nature and Context of the Study

1.1  Papua New Guinea; Problems and Challenges

Papua New Guinea is a country which has been richly endowed by nature with an abundance of natural resources (McKinnon, 2002) and it has within its borders some of the world’s largest gold/copper mines (Thompson & MacWilliam, 1992). Mineral deposits, including oil, copper, and gold, account for nearly two-thirds of export earnings and 20% of its national budget is made up of the approximate $240 million in aid supplied each year by Australia (CIA 2006).

It is not unique in having an abundance of natural resources. Neither is it unique in its failure to maximise its return in its exploitation of those resources. Nor is it alone in permitting extensive destruction of its natural environment in pursuit of the revenue which those resources are capable of providing.

The fact that PNG’s total land area of some 453 thousand sq km (CIA World Factbook, 2001) principally comprises (c. 95%) of mountain ranges, river systems, extensive forests with extreme access difficulties and marked tendencies toward mud slides, volcanic activity, and tsunamis heightens the responsibility of the government of the day to ensure that the decisions
regarding the grant of mining licences are proactively managed. This difficulty regarding the terrain and site accessibility has also been used as an excuse by the authorities for a lessening of the diligence with which they oversee and police the mining activities and it is frequently used as a catch-all by the mining companies in an often successful attempt to reduce their environmentally-protective procedures.

The challenge for PNG is that of achievement of social and economic development while ensuring the sustainable and environmentally acceptable management of its natural resources in the context of the mining industry being one of the two most significant contributors to the PNG economy (the petroleum industry being the other) (Patwa, 2000).

There are clear limits to the extent of economic activity capable of being conducted on the environment (Johnson, 1989) and when these limits are exceeded - whatever the cause - environmental pollution is precipitated. Common (1988) believed that this problem of environmental pollution is a result or function of market failure. Ascher (1999) refers to policy failures in natural-resource management practices as those which are societally unsound and he illustrates the extent and incidence of such failures. In his view, examples of these failures include the underpricing of the franchise allocation to the resource exploiter, the underpricing of the resource outputs, and a failure to ensure competition. Countries which have common experience in this failure to maximise returns on resource exploitation include Indonesia,
Ivory Coast, Honduras, Nigeria, Venezuela and many others (ibid.). Australia too experienced a period during which it - sometimes purposely - experienced a minimising of the mining royalty returns but did so in most instances in return for benefits in other areas such as facilities and housing construction by the mine operators.

Papua New Guinea is, however, perhaps unique in having the concept and objective of responsible environmental management and environmental protection enshrined in its Constitution. This laudable inclusion was specifically the result of the country's experience of environmental degradation ensuing from natural resource exploitation prior to the adoption of the Constitution. In so elevating the concept of environmental protection the PNG government recognised the role and importance of environmental planning and the management of its natural resources and embraced the view expressed by Nagel (2002) of environmental protection and conservation of nature being principally a function of government. In September 1975, the PNG government passed an environment and conservation policy statement with adoption of explicit reference to environmental concerns in the Five National Goals and Directive Principles of the Constitution. The Fourth Goal is stated as being that Papua New Guinea's natural resources and environment to be conserved and used for the collective benefit of all of the population and that it be replenished for the benefit of future generations. That Goal also adopts the concept that the environment and its sacred, scenic and historical qualities be conserved and replenished (SPREP, 1980).
Shortly after gaining independence in 1975 and the institution of the Papua New Guinea Constitution, the initial recognition of the importance of environmental preservation was further evidenced by the passage of three pieces of legislation in 1978. These were as follows; The Environmental Planning Act, which sought to provide the framework within which responsible environmental planning procedures might be invoked; The Environmental Contaminants Act, which encompassed many areas of environmental pollution and provided for the licensing of water, air, and land pollution and prohibitions and imposition of penalties in relation thereto; and The Conservation Areas Act which provides for the protection of certain areas and the promotion of sustained and optimal resource management.

Since gaining independence, there has also been a growing number of policy instruments available to PNG governments. Examples of their deployment in many countries could have been utilised by the Papua New Guinea government in establishing environmental policies. These include such concepts as the establishment of regulations and standards and voluntary agreements ranging to tradable permits and deposit refund systems (Folmer & Gabel, 2000). Papua New Guinea also became a member of such international environmental and conservation conventions as The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, and The Convention of Conservation of Nature in the South Pacific, 1976, to name but two.
In 1995, the Papua New Guinea Government was the recipient of a World Bank Economic Recovery Programme loan intended to support a programme for that purpose which was part of a broader agenda of structural adjustment. In 1997, the Skate Government was elected and this government was found to be even more obstinate in its failure to adhere to the disciplines required by the Bank - particularly in regard to economic governance matters and forest management stipulations. These forest management requirements created a series of confrontations between the Bank and PNG politicians and almost derailed the recovery programme in late 1996. Moreover, the International Monetary Fund ("IMF") determined that the economic governance failures were pivotal in what it described as a looming financial crisis (Filer et al., 2000).

It is also evident that the inhabitants themselves are complicit in the destruction which is occurring around them - both by sale of labour and acceptance by the people of payments from mining companies for reparation and local development - and that the 'mutually supportive relationship' which has been described as existing *ab initio* between the people of PNG and the environment is under threat. Rahland & Ecevit (2002) argue that, despite the fact that the people of Papua New Guinea have a deep spiritual and emotional link with the environment, the lure of short-term benefit is providing a grave challenge to that relationship and, indeed, the traditional concern for the
environment and the long-term effects of the mining activities are being ignored in favour of that immediate and tangible ‘good’.

While there is a presumption of relative impotence on the part of indigenous peoples in prospective mining development negotiations, they are "far from passive victims of domination but, without exception, they are active participants in the development process." (Connell & Howitt 1991, p.3)

It can be argued that any appearance of complicity on the part of the inhabitants is a result of necessity and that their support of these companies in their destruction of the environment is part of the enigma which requires to be resolved. That support by the people is evidenced by the paradox of the traditional land-owners eager to consummate arrangements with resource exploitation companies and the voluntary and concurrent sale by the people of their labour. The paradox is compounded by the fact that both factors are coincidental with several domestic and international litigation actions against these companies for that very damage to which the people themselves contribute and appear to condone by virtue of mining agreements and the sale of their labour. It is a moot point as to whether and to what extent any such litigation should reasonably be directed toward and involve their own government.

This apparent complicity on the part of the local peoples is further evidenced by agreements such as that signed on April 10, 2001 by Ok Tedi Mining
Limited (OTML 2001), the operator of the Ok Tedi gold and copper mine, with the representatives from 19 villages in the Lower Ok Tedi region. Some 60,000 people live along the Ok Tedi and Fly River systems in the Western province (OTML, 2003). The area has witnessed extensive environmental degradation as a result of the mining activities conducted there - particularly those of the Ok Tedi mine.

The agreement of April, 2001 covered the continued operation of the mining activities and embodied the pledged support of the indigenous representatives for that continuation until the mine life ends in 2010 (OTML Media Release, 10/4/2001). This was effected despite the extent and purpose of the litigation which was initiated with some success by the local people for compensation claimed as a result of the environmental damage caused by the mine's operation since its inception in 1984.

Moreover, in a statement delivered to the PNG Parliament on September 26, 2001 by the then PNG Prime Minister, Sir Mekere Morauta, he acknowledged that the environmental damage caused by the Ok Tedi mining operation was greater than expected when the mine opened and that it was a serious problem affecting many people along the Fly River system while, at the same time, implicitly endorsing support for the continued operation of the mining activities.
It is also relevant to note at this time that, as pointed out by Connell and Howitt (1991) there have been no instances where the development goals of the indigenous peoples have been successfully married to the goals of the resource exploitation companies. In fact, they assert, the marginalisation of the local peoples because of the mining activities has highlighted the frequency of conflict in the aspirations of the two groups.

Dwyer (1999) discussed the manner in which a resource rent tax as incorporated in the PNG fiscal arrangements 'maximised' the mineral rent achieved from the country's resources and that a substantial share of this was captured by the government. However, there is a further complication arising from the receipt of these mineral rents from resource exploitation as identified by Australian National University Emeritus Professor Helen Hughes (PNG Post-Courier, 2004). She asserts that in immature societies the heavy reliance on natural resource exploitation not only precipitates stagnation but the resulting resource rents become siphoned off into corrupt payments to members of Parliament rather than being used to facilitate infrastructural development and the increased dependence on resource rents precipitates the relentless pursuit of natural resource exploitation.

Sustainable development has been described as development which secures increases in the welfare of the current generation without precipitating a decrease in welfare in the future and when attention to sustainable development is ignored the relationship between economic growth and
environmental quality is inverted and the stock of environmental capital falls. In order to ensure sustainable economic development it is necessary to bring about income growth resulting in sustainable poverty reduction (Sathiendrakumar, 1995). The exploitation of environmental capital stock should result, not only in returns for the entities exploiting the resource, but also in the growth of social and economic capital for the host country and region. There is a corresponding and overriding requirement to establish a balance - particularly in instances of exploitation of nonrenewable resources - between the legitimate objective of profit generation through the extraction and sale of minerals and the necessity for remedial work and environmental regeneration as an essential element of the mining activity.

In the case of PNG – as in many other LDCs around the world – that requirement has now assumed a high degree of urgency. The compromises which are reached and the manner in which that conflict is addressed will determine not only how history will judge these industrial endeavours but, more importantly, the future development of the local people and their environment.

Governments in countries such as PNG, which possess an apparent abundance of natural resources with a ready and extensive market in the developed world, have demonstrated a tendency, because of that fact, to experience a period of optimism and a degree of overconfidence about their future prospects. Coincidentally, that optimism precipitates a tendency to pay
inadequate attention to the responsibility of ensuring that the industrialisation, the establishment of alternative means of creating wealth, and the advancement of the country is achieved before the nonrenewable resources and the earning capacity from those natural resources are exhausted (Livingstone, 1989).

The intergenerational responsibility is also a matter frequently sidelined in the considerations of nonrenewable resource extraction and the requirement to pursue a programme of environmental damage measurement has, prior to a heightened awareness of the necessity of conservation, often been overlooked in investment appraisals of such activities. Environmental damage is at least as relevant a cost in considerations involving nonrenewable resource extraction as are any other cost considerations and for current and future generations it is relevant to attempt measurement of the monetary cost of that damage and of its remediation (Pearce et al., 1990).

The responsibility in that area of advancement and in the areas of planning and management rests with the government authorities. It is the responsibility of such authorities to ensure that the country’s initial reliance on its natural resources remains just that, i.e. an initial reliance rather than an ongoing one. It is the government’s charge that exploitation of such resources provides a basis for the development of long-term supportable economic activity in the country. That purpose, albeit on a broader basis, was intrinsic to the PNG Government's manifesto and was acknowledged to be so by the IMF in
October 2000 in its Memorandum on Economic and Financial Policies of the Government of Papua New Guinea. Yet the overriding requirement of successive PNG governments to maximise returns from such activities in order to provide a foundation for the establishment of broad-based industrial economy has yet to be fulfilled. The failure to adequately and clearly delineate operational standards for the resource exploitation activities and to monitor and police such activities has made the task of environmental remediation and economic restructuring even more difficult.

The question of the establishment of environmental standards is also a governmental responsibility which is the antecedent and determinant of the monitoring function. The environmental standards which are generally acceptable and required in developed countries are well known and established. PNG, like other developing countries, seems to adopt a somewhat schizophrenic approach to the question of environmental standards particularly in regard to such resource extraction activities as forestry and mining. Most multinational corporations which operate such activities in developing countries are well aware of their attendant responsibilities. Nevertheless, without an adequate level of supervision and policing, companies may succumb to the temptation to ignore environmental protection requirements and the extent to which a multinational corporation operating in a developing country is willing to comply with environment-related stipulations will depend, not only on the costs and benefits involved
(Dunning, 1993), but also on the level of policing and existence and application of punitive costs.

A mineral resource rent is the product net value after deduction of all necessary costs (Garnaut and Ross, 1983). However, the search for such rents, and in some cases government subsidies or inducements to facilitate mining activities in order that a resource rent be created, can also, of itself, be sufficient to precipitate the environmental degradation. This can occur while, at the same time ignoring the 'first principle of resource economics' (Ascher, 1999. p. 16) for extraction from public lands which is described as the responsibility to levy the full value of the extracted resources.

That natural resource exploitation, particularly in the case of Papua New Guinea, is mostly conducted in inaccessible locations exacerbates the difficulties of monitoring and policing the activities concerned by virtue of the physical difficulty in regularly accessing these areas for assessment and, consequently, ensuring remedial recommendations or requirements are being fulfilled. Moreover, the fact of such remoteness creates, at the most basic level, a situation whereby any question of protection of the environment must, by definition, be reactive rather than proactive in nature.

The very nature of the remote location of the sites of resource exploitation and the access difficulties presented by the mountainous and jungle terrain mean that, by the time knowledge of the damage reaches a monitoring and policing
authority, it is too late to engage in pre-emptive environmental protection discussions – much less, action. To overcome these difficulties there would be required either the permanent presence of appropriately-trained monitors with the requisite authority to enforce compliance, or rapid access facilities such as helicopters and rough-terrain vehicles manned by qualified personnel. However, the acquisition of such equipment and training would be predicated on availability of extensive funding.

In most cases in PNG, those most affected by the environmental damage are those least equipped to protest, deal with, or restrict the activity. They are those who cannot object to the consignment of the function of ‘natural resource management’ to the position of being hostage to the achievement of other objectives. These other objectives are those desired by a government with priorities which give little emphasis to the function of protection of the environment and companies for which the preservation of the environment is a subject of concern only by dint of the fact of the potential consequent financial or public relations fallout. Furthermore, because of the frequency of the occurrence of ‘settlement’ agreements and the incidence of payoffs to various groups within the affected areas, there appears to be a growing tendency on the part of the people of PNG, as asserted by Rahland & Ecevit (2002), toward acceptance of the trade-offs required in terms of the long-term damage to the environment in order to secure the short-term benefits on offer - rather than preparation of and adherence to a pro-active, ecologically-responsible plan of resource management.
This propensity is a direct result of interest group pressures being brought to bear by the proponents of the exploitation activities and, in turn, the various ministries and groups which stand to benefit from the decision to permit such proposals to proceed. The benefits which ensue serve the interests of a small number of people in each individual case whilst the abdication of the environmental concerns causes damage to a great number of people for an extended period of time - perhaps irrevocably.

In this context, it is contended by Wilson (1990, p.11) that interest group activity is most likely to develop when "costs and benefits are concentrated on a small number and are also significant". And, as stated by Ascher (1999), the general power of individual government officials and their units is determined by their control over the allocation of the natural resource wealth and the cash flows involved in resource exploitation. In that, there is a separate and distinct benefit to the officials concerned, other than the objectives of the resource development proposal itself. That is the fact of the discretionary power entailed in the decision-making process and that power to assign may be more compelling for them than is the possibility to enrich themselves physically from the allocation of the natural-resource wealth.

The extent to which these influences play a part in the decision-making process of the PNG Government in the context of the mining industry is to be determined. The United Nations Economic and Social Commission for Asia
and the Pacific (UNESCAP) has stated in its 1996 analysis of the National Institutional Arrangements for Integrating Environmental Concerns Into Policy Decision-Making Processes that, in regard to small-scale alluvial operators in the PNG mining industry, i.e. alluvial gold-mining operations, the PNG Department of Environment and Conservation had literally turned a blind eye to those operators and had allowed them to take advantage of this provision because of the chronic shortage of monitoring staff.

Added to this chronic lack of people to monitor and police the industry is the fact that, under the Environmental Planning Act, the developers of a mining or development project are permitted to voluntarily prepare and submit an environmental management plan. UNESCAP also states that, to date (i.e. 1996), most environmental plans have been of the 'voluntary' type and, therefore, not fully debated by local government or the PNG Parliament and considerably more likely to be self-serving toward the developers.

Moreover, the PNG Environmental Protection Authority, which is, in itself, no more than the physical embodiment of the aspirations enshrined in the Constitution, does not compel the incorporation of any environmental protection measures in a development scheme. The Act only recommends the consideration of environmental protection and management procedures. These requirements are clearly inadequate in terms of the establishment of an acceptable level of environmental control or monitoring. The growth in social awareness of the problem of environmental degradation continues to focus the
attention of the PNG government in determining ways in which the matter can be addressed (McKinnon, 2002). However, the legislation enacted to provide the basis of that protection is more often honoured in the breach than in the observance.

Since the re-election of Sir Michael Somare (variously referred to as the father of the nation due to the fact of his having been PNG's first prime minister; or the Chief) to power in 2002, the expectations and aspirations, common to many observers at the time, that his re-election would lead to a renaissance for Papua New Guinea, increasingly appear to be unfounded. In 2005, following continuing and growing evidence of societal and developmental dysfunction over many years and a recognition of deterioration in economic management, fiscal management, political instability, and quality of governance, the Somare Government introduced what is referred to as the Medium Term Development Strategy 2005-2010 (MTDS). The MTDS is intended to be a programme for recovery and development of the economy having as its objectives good governance, export-driven economic growth, rural development, and poverty reduction (Orere, 2005 a).

The fact that these acknowledgements and statements of objectives constitute a statement of pre-determined ambition since the date of PNG's independence should not be allowed to diminish what is ostensibly a well-intentioned and desperately needed programme. Nevertheless, it has already come under criticism as being a product of 'deadening ideology' in an attempt to put a
gloss on what the Government is trying to do while glossing over what it has 
failed to do. The relevant economic context is described as terribly serious 
and getting worse (Patience, 2005 a).

The promises of Sir Michael's predecessor, Sir Mekere Morauta, in July 1999, 
inter alia, to restore integrity to state institutions and stabilise the kina and the 
national budget were undertakings also given by Sir Michael in the lead-up to 
his re-election. However, the kina\(^1\), having depreciated against the United 
States dollar (US$) by over 70\% from 1988 to 1998 (source: World Bank 
Report, No. 19388-PNG, 1999), has again depreciated by a further 20\% in 
2002 (O'Callaghan, 2002) adding a growing urgency to the necessity to 
revitalise the economy.

These events create another inherent difficulty in ensuring satisfactory 
monitoring and control of resource exploitation and it does not augur well for 
the continuing constructive management of the nation's resources and 
environment. Indeed, the problems experienced in such monitoring and 
control contribute toward the creation of further difficulties precipitating a 
vicious cycle. In a 2004 report upgrading PNG's currency rating, the 
international ratings agency, Standard & Poor, stated that the upgrade was 
predicated, inter alia, on the expectation of increased "technical, financial, and 
security assistance from Australia" and qualified its judgement with the 

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\(^1\) The kina is the national currency of Papua New Guinea. The 2003 annual average 
kina/US$ exchange rate was US$3.54 (The Economist PNG Report, Jan. 2004)
caution that, because of PNG's failure to broaden its economic and revenue base, its economic and fiscal performance remained highly sensitive to fluctuations in commodity prices (The Australian, 23 Dec. 2004). It is fortunate for PNG, therefore, that Australia does, in fact, see itself as having "compelling strategic interests in a stable and prosperous Papua New Guinea" (AusAID Annual Report 2003-2004 p.29).

In fact, Australia, desperate to obviate the possibility of the disintegration of its nearest neighbour, provides aid to PNG at a level of about 20 per cent of PNG's total aid budget revenue and, despite appending structural and political reform conditions on further aid grants, there seems little possibility of such aid disappearing (Forbes, 2002).

There remains a growing and continuing critical emphasis being directed toward both the mining activities in PNG and the reducing attractiveness of PNG as an investment location with a corresponding reduction in exploration expenditure. There have been, as a consequence, further indications from government sources of a reduction in environmental protection measures and pre-requisites in the mining sector in PNG. This is evidenced by the recent pronouncements of the PNG Government with regard to increasing the inducements to potential resource exploitation operators (Robins, 2002). Robins also alludes to the evidence of a growing eagerness on the part of the PNG government to attract more investment in the area of exploration and mining.
The PNG Government has further announced that mining taxes will be revised in order to revive investor interest in the resources sector with some taxes being abolished and others reduced (ibid.). According to PNG Mines Minister, Sam Akoitai, three of the principal projects under review for imminent approval were gold prospects (ibid.).

This renewed desire for investment in the resource sector appears to follow a pattern: following the closure of the Panguna copper mine on Bougainville in May, 1989, which was responsible for the pollution of land, rivers, and contiguous marine areas, and the resultant severe depletion of tax revenues and exports; the PNG Government was forced to relax its already weak environmental standards for the BHP-operated Ok Tedi mine.

"Government representatives have openly said that they cannot now afford to stop the Ok Tedi mine discharging huge amounts of waste into the Fly River system or prevent the siltation of most of the upper tributaries. The unintended result of the attempt by the BRA (Bougainville Revolutionary Army) to end the mining and clean up their river systems has led to government decisions which will cause, at the very least, the destruction of the Upper Fly River system in the Western Province" (Thompson & MacWilliam, 1992, p. 180).

As a result, by 1992, production had again escalated dramatically and, in that year, over one billion dollars worth of gold and silver was exported from PNG.
mines. (Lipscomb et al., 1998) with the attendant environmental damage which is addressed in Chapter 4.

That this continued pursuit of further exploitation of the country's natural resources should occur at this time should also provide the opportunity to ensure the imposition of environmentally-protective measures and a system of implementation of a full and rigorous monitoring and policing system capable of ensuring that any future development projects will be conducted in a manner which precipitates a minimum (or what might be described as an optimal) level of damage to the environment.

1.2 Aims and Structure of the Thesis

Despite PNG's ostensible dedication to responsible management in the areas of pollution and natural resources and the considerable financial and administrative aid received; in the space of little more than half a century, while seeming to address these elements of environmental policy, the PNG government has arguably permitted and witnessed a level of degradation in natural resource exploitation unprecedented in such a short period of time, i.e. in less than thirty years. That the degradation remains unredressed compounds the issue although the fact that this redress has been lacking is in many instances partially due to the fact that it is only relatively recently that the theoretical association of development and protection of the environment in a social and political as well as an economic context has been successfully established (Adams, 1990).
The approach employed in the thesis begins with an examination in Chapter 2 of the historical background of mining activities in PNG and the growth in the resulting environmental impact. This is followed in Section 2.2 by an analysis of the interaction of the mining industry and its impact with the concept of land tenure in PNG and the PNG Constitution. In Section 2.3 the political context affecting election to public office and the impact on the decision-making processes relating to the mining industry is examined. Sections 2.4 and 2.5 deal with environmental pollution as an externality and policy design and implementation relating to the environment.

The literature review in Chapter 3 is followed by an analysis of the environmental impact resulting from the operation of three PNG mining operations. Examples and evidence of the degradation are presented in Chapter 4. As will be discussed later, the initial exploitation, prior to the 1950s, of its natural resources was conducted in a manner which was, by comparison with later conduct, environmentally friendly. By contrast, the damage done by exploitation in the period leading up to and following the 1970s is enormous by comparison (Susapu & Crispin, 2001).

The overall field of study is determined beginning with the research question, i.e. to determine the most likely motivational forces at play in the decision making processes of the Papua New Guinea Government in the context of the licences and authorities granted by it for mineral resource exploitation.
Previous research in the context of the mining industry in PNG has tended to concentrate on the description and analysis of the fact of the degradation which has resulted from the exploitation of the mineral resource.

They have tended to avoid attempting an explanation for the reasons and justifications as to why it would be that successive democratically elected governments would apparently knowingly issue authorities to mining companies which, in the process of exploitation of the resource, precipitate environmental damage to a degree which has been stated by many to be unacceptable and potentially irreparable.

The research methodology will involve an analysis of the current position in regard to each of the three mining activities being those of the Porgera gold mine, the Ok Tedi mine, and the Lihir gold mine. The reasons for the choice of these particular activities are as a result of the relative abundance of literature and analysis on the subjects, the general academic acceptability of the main body of that work; and the very extent of the environmental damage already caused by these activities. The extent of that environmental degradation which has occurred as a result of the operation of these mining activities will be examined to determine the level to which such degradation might have been anticipated had a proactive management programme of natural resource exploitation been implemented prior to the granting of licences.
1.3 Conclusion

While having experienced a high level of environmental damage in the resource exploitation activities in specific areas, PNG is a country which still retains a relatively unspoiled and sparsely populated environment. However, as is evidenced in Chapter 4, the environment is increasingly coming under threat and the acceleration of that pressure over the recent past - particularly in the last 15 years – is such as to suggest that the threat to the environment will increase rather than diminish.

Moreover, this apparent trend regarding the environment is not at odds with the views expressed by Martin & Schumann (1997) on resource exploitation since the United Nations 1992 conference on the environment and development in Rio de Janeiro. They opine that the global pattern in the context has not changed since that time.

From 1990 to 1997, exploration expenditure in PNG averaged around US$40 million per annum but then declined sharply to a level of c. US$10 million in 2001 and the prognosis is for further declines in the future. The PNG Chamber of Mines and Petroleum projections (PDAC Paper, March 2002) indicate an expected total decline in annual gold production from existing mines from a production of 74.5 tonnes in 2000 to 0 tonnes in 2012. This decline in production is allied to the reduction in exploration expenditure. It is this decline in exploration expenditure which has led to the PNG
Government’s declaration regarding the reduction of mining taxation and an increase in the incentives for companies considering further exploration.

The ecosystems affected by the mining industry in particular are under a threat which is dual in nature and compounded in its effects. Forestry operations, leading to deforestation of vast tracts of territory, result in the topsoil being progressively washed away in those areas because the ‘anchor’ for the topsoil, i.e., the forests, is no longer present. Rahland & Ecevit (2002) estimate that PNG forests currently available for logging will be fully exploited within 25 years if logging continues at its current rate.

Similarly, while the target of the mining industry is the mineral wealth beneath the forests rather than the forests themselves; in order to access the minerals, there is required to occur large-scale clearance of the forests resulting in further erosion of topsoil with flow-on effects on lower level systems, both terrestrial and aquatic.

The preservation of the environment is fraught with difficulties common to lesser-developed countries such as a population still largely dependent on agriculture - 88% of PNG’s population being estimated to live in rural areas (Pitts, 2002) - the proliferation of as many as 850 disparate local languages among the population (Anderson & Moramoro, 2002), a declining per-capita gross national product (partly due to the fact that population growth rates have exceeded economic growth for the past two decades (current population is
stated to be 5.19 million according to the PNG census return of 2000),
economic decline in recent years, and a declining export-generated revenue
base albeit with a growing dependency on commodity exports - the mining
industry represented 44% of export income in 2000 and approximately 15% of
GDP. PNG produced 74.5 tonnes of gold in 2000 and 67 tonnes in 2001
(Anderson & Moramoro, 2002).

Along with a growing dependency on resource-based government revenues,
PNG also manifests a growing dependency on international aid - particularly
from Australia. It is, therefore, both ironic and inauspicious to note that those
countries which are the highest per capita recipients of aid have manifested
the slowest rate of economic growth (Hughes, 2005). International Monetary
Fund economist, Sanjeev Gupta, has empirically determined that for every
extra dollar of aid given to aid-dependent countries, the recipient governments
raise 28 cents less in tax (Gupta et al., 2004). Of further concern, Gupta et al.
have found that the more corrupt a country, the more the revenues of that
country decline as the grant aid it receives increases.

In keeping with the views expressed by Hughes, Gupta et al. interpret their
data as implying that the provision of aid to countries with weak or inefficient
institutional administration should be accompanied by directives and policy
generation designed to strengthen domestic institutions rather than eliminating
or limiting the provision of aid to those countries.
In view of the extent of the evidence of the environmental degradation in Papua New Guinea, the dramatic deterioration in economic conditions in recent years, and, ironically, the economy's growing, rather than diminishing, dependency on primary commodity exports, including gold; the question of ensuring that the exploitation of the country's natural resources is effected in a manner which is sustainable and that, coincidentally, the environment is protected, becomes one of both extreme urgency and extreme complexity.
Chapter 2  
Overview of PNG Economy; Developmental and Environmental Concerns & Political Context

2.1 Historical Background of the Mining Industry in PNG

In order to give context to the current situation regarding resource exploitation and environmental degradation in PNG, it is necessary to examine the relevant historical background.

In 1901, Australia assumed administrative responsibility for the territory known as New Guinea and in 1905 the formal transfer to Australian jurisdiction was effected. The two territories of Papua and the eastern part of the island of New Guinea - which became the Independent State of Papua New Guinea (PNG) - was formally recognised by the international community.
on the 16th of September 1975. Having been colonised at various times in its history (by the Dutch in the early part of the 19th century, and the Germans and British in the latter part of the 19th century); in the 20th century the principal influence came from Australia. Since independence for PNG in 1975, Australia has also become one of its largest aid donors and it is, in fact, the principal foreign beneficiary of Australian aid with an estimated aid package for the period 2002-2003 amounting to over $351 million (AusAID).

Australia was also the principal initial source of interest and actors in the gold mining industry in Papua New Guinea. In the 1880s gold in economically viable quantities began to be discovered in PNG - principally by Queensland expatriates (Anderson & Moramoro, 2002) - and was followed, in the ensuing 30-40 years, by an increasing concentration of gold exploration throughout the territory. There followed the instigation of a major dredging operation in the Bulolo valley in Morobe Province which further precipitated small open-pit mining in the Wau region in the mid-1900s (Susapu & Crispin, 2001).

The initial results of these discoveries and production were an expansion of the awareness of the gold mining opportunities and the exploration activities and a move from alluvial gold mining to mechanised mining operations beginning with the dredging operations in the Bulolo valley. The activities of the alluvial gold miners over the period to the early nineteen thirties involved more environmentally considerate methods such as placer panning and water
jet extraction, which had tangible beneficial effects on the embryonic economy. Whilst there continued, and continues, to be an extensive mining activity in the extraction of alluvial gold\(^2\) which is encouraged both internally and internationally through such support mechanisms as AusAID; the expansion of large-scale corporate mining methods and operations in the ensuing decades witnessed a move toward exploitation of lower grade deposits with the attendant requirement for increased mechanisation and a continuation of the trend toward corporatisation of mining entities. This corporatisation also involved an expanding international presence and a growing evidence of a diminishing regard for the environment as the environment was regarded as a free good.

Nevertheless, the continued development of the resources sector in PNG became an ever more important aspect of the overall PNG economy and, in 1998, the resources sector constituted approximately 26% of the PNG GDP and 70% of exports (AusAID, 2000). As a result, this growing concentration of large-scale mining methods had begun to increase the social cost in terms of growing environmental impact and damage. The growing cost of exploration and mine construction, because of the mountainous and inhospitable terrain, (the total cost of exploration and mining is estimated to be around 400 per cent more in PNG than in Australia, (ibid.)) resulted in

\(^2\) [Susapu and Crispin, 2001 & Rahland & Ecevit, 2002, p.15, estimate that up to 80,000 miners were still involved in this activity in 2001]
progressively more exploitative approaches to the gold-mining activities by the exploration companies.

On January 20, 2000, the World Bank wrote to Sir Michael Somare’s predecessor, Sir Mekere Morauta (in response to Sir Mekere’s invitation), to the effect that it was examining the Ok Tedi Mining Limited treatise on retrospective mine waste management.

In that correspondence, the Bank, agreeing to provide financial assistance, stated that the assistance was being provided in order to assist the Government in dealing with the broader issues of the Government’s social and environmental stewardship and responsibility. The World Bank also expressed the view that one of the critical success factors with regard to natural resource sector projects was that of delineating institutional responsibilities between governments and the private sector to provide support for social and community development activities (housing, water and sanitation, health care, education, training and enterprise development, and infrastructure such as access roads and bridges), either to mitigate social impacts or to improve social cohesion (World Bank Discussion Paper, No. 384, 1998).

The Bank recommended that the opportunity should be grasped and developed to build an international policy approach both contributive from the point of
view of funding and to provide guidance and administration assistance in terms of monitoring and policing.

2.2 Land Tenure, the Constitution, and Mining

For indigenous peoples the land is evidently the central focus of their social identity (Connell & Howitt, 1991). In the case of the peoples of Papua New Guinea, land is viewed as an essential part of their heritage and is of paramount importance in matters of their cultural integrity (Gaudi, 1999). Ninety-five per cent of all the land in PNG is still held under the system of customary ownership (Pitts, 2002). The traditional nature of land ownership in PNG is based on the occupation and usage of the land according to the customs of the land-owning group - which "in all cases, is the clan." (Donigi, 1994, p.32). Each clan or sub-clan is the owner of sections of land for garden use or as hunting bush in the vicinity of the hamlet in which they live (Berndt & Lawrence, 1971).

Mugambwa & Amankwah (2002) believed the land in PNG to be the basis of economic and social interaction for most of the country and that its added role as a complex cultural, religious, and psychological factor in PNG life impacts also on its legal standing. The question of traditional ownership of resource-rich land areas also goes to the heart of such matters as national identity, democracy, constitutionality, and legitimacy of government processes and that disputes about land ownership constitute a challenge to identity and
sovereignty within the state rather than between nation states which they see as imagined communities (Howitt et al. 1996).

The Latin legal maxim, *cujus est solum ejus usque coelum et ad inferos* (which, roughly translated, means; he to whom the land belongs, to him also belongs to the sky and beneath the land) encapsulates the concept of land ownership under the common law of England. Despite this and the fact of the adoption of English common law by the PNG constitution in 1975; legal and polemic argument has continued in PNG as to whether that ownership extends to the sub-soil resources. The principal protagonists for the contention that such extension of ownership does not exist have tended to be foreign advisers to the government and the mining industry (Donigi, 1994). Nevertheless, as contended by Donigi, the indigenous landowners' ownership is supported by international law, constitutional law, Commonwealth legal precedents, United States laws, and the common law of England.

As stated, it is estimated that approximately 95% of the land in PNG is owned in this (customary) way (Patwa, 2000; Donigi, 1992; Pitts, 2002) and property ownership and transfer matters are further exacerbated by the difficulties faced in the function of environmental planning. Moreover, the land tenure system varies from place to place within the country and there are different systems of land rights applicable to different categories of land use (Anderson & Moramoro, 2002). In general, land ownership lies with a local group and
membership of the group depends upon such things as descent, residence and participation in activities common to the group.

This system can be referred to as the 'customary ownership' system. The land cannot be sold or leased other than in accordance with customary law although, under the Mining Act 1992, the State purports to guarantee the licensee of the mining rights, the right to exploit minerals, and, thereby, purports to override customary ownership. From this and associated matters arises the difficulty of the question of the ownership of the minerals beneath the surface. Donigi (1994, p.32) asserts that ownership of the "sub-soil resources by landowners is based, since time immemorial, on possession of the land surface." and, therefore, all non-government land is 'customary land', the occupation and usage of which is governed according to traditional custom.

Successive governments - aided by, and in the interests of, the mining industry - have argued that such possession of the land does not give corresponding ownership rights to the sub-soil resources. The PNG Constitution – as with any sovereign and democratic country’s constitution - is intended to serve as the ultimate arbiter of the nation’s system of justice, the rights of the individual against the state, and the manner of the administration of justice and the law.
The PNG Constitution has adopted the English rules of equity and common law - except in so far as they were not in conflict with the customary law of PNG. Further, English law recognises that ownership of the land encompasses all that lies above and below the surface. The obvious and inescapable conclusion, therefore, is that there is prima facie evidence as to the ownership of the sub-soil resources which render the assertions of the PNG Government to be seen to be, at best, inaccurate.

This also raises the more vexed question, sometimes surreptitiously promulgated by PNG governments, of the supremacy of the Constitution of Papua New Guinea and whether it can be altered by legislation as was attempted by the 1992 Mining Act. The PNG Constitution is the supreme law of Papua New Guinea and all subsidiary legislation is subject to its provisions (Donigi 1994). This fact opens to question the legitimacy of legislation by the State (such as the mining legislation referred to above) relating to the ownership of sub-soil resources in so far as the legislation attempts to subvert or alter those sections of the Constitution which confer those rights on the customary owners of the land. Moreover, the Constitution states that no interest in property (including land and any minerals as part of that land) may be compulsorily acquired by the State except by act of parliament and any such legislation is, as stated, subject to the Constitution. It is, therefore, arguable, and argued, that any mining legislation which purports to grant rights to mineral resources under customary land or purporting to vest in the
State the sub-soil resources is, ipso facto, unconstitutional and, consequently, potentially voidable.

Land disputes in Papua New Guinea - which are common - are a further complication in the matter of environmental planning and they very often arise as a direct result of the perceived appreciation in the value of the land consequent upon the mining activity itself. These disputes often revolve around the question of distribution of benefits resulting from the mining exploration activities. Land tenure agreements are, therefore, a factor with which mining operations must also contend. Traditional land tenure agreements normally provide members of a particular clan or group with access to some land which will thus provide a degree of security, work, and a means of earning some income. Each village is associated with a clan - dominated by the male members - and house-sites are handed down from the father to his sons (Kaberry, 1971).

There is also the matter of conserving the general biodiversity of PNG, a challenge which is made more difficult by consecutive governments' fear of the alienation of particular segments of the community with the result that there are few totally protected areas in PNG. There have only been four national parks established in total since before PNG independence (Lipscomb et al., 1998) including the McAdam National Park which is an area of some 2076 hectares located between the Wau and Bulolo Rivers in the Morobe Province. (The Morobe Province is Southeast of the Western Highlands
Province – the site of the Ok Tedi mine. This was also the location of small open-pit mining activities in the mid-1900s.)

These difficulties have been exacerbated by the growth of the PNG population, the desire on the part of many for 'Westernisation' of their lifestyles, a growing lawlessness among many of the inhabitants, and a population which has become accustomed to the immediate benefits and gratification available on the securing of an agreement with a mining or a logging company. Securing such an agreement is necessarily the result of negotiation between the mining company, the government representatives, and the traditional landowners. In most such negotiations, the national interests are diametrically opposed to those of the landowners (Connell & Howitt, 1991) and the diverging interests have disrupted donor-funded projects because of landowners demanding compensation (Kewa, 2004).

The fact of communal land ownership has also been identified as one of the principal causes of deprivation in rural communities including those of PNG. It was asserted by Professor Helen Hughes that the communal land ownership described above had contributed to corruption - particularly in regard to timber exports - and that it had precipitated substantial losses in tax revenues and to environmental degradation in PNG (Cheung, 2004). Indeed, the situation is so fraught with difficulty that any organisation wishing to exploit the country's natural resources must negotiate with an indeterminate number
of customary landowners, most of whom are prepared to abandon their resources for the right price (Filer et al., 2000)

2.3 Political Context

In 1962, a visiting United Nations mission joined the then chorus of world opinion in pressuring Australia to begin the process of preparing the two parts of the territory of Papua and New Guinea for independence (refer Figure 2.1). In 1964, a House of Assembly was formed consisting of 64 members. Self-government was introduced in 1973 and in September, 1975, PNG was granted full independence. It thus became an independent parliamentary democracy within the British Commonwealth with a unicameral system of government but based on the Westminster model. The British monarch as head of state, on the recommendation of the PNG parliament, appoints a governor general. Parliamentary elections are held at five year intervals; the parliament then elects a prime minister who then chooses the ministerial appointees.

In 1976, there was established a provincial system of government with the formation of 19 separate provinces and a national capital district – each with its own provincial assembly and each requiring its own electoral process. That system was described by Thompson (1994) as rendering the task of national resource planning almost impossible. In the event, many of these assemblies were thereafter suspended for mismanagement or corruption and it
was realised that further reform was needed. Poor prioritisation of reform initiatives are seen to have precipitated economic and social failures in PNG while measures which were deemed unimportant or nonproductive for PNG's development were implemented (Orere, 2005 b).

The provincial system was radically altered as a result of reforms which followed the Constitutional Review (Micah) Commission in 1995 set up to examine the mismanagement and corruption in the provincial assembly system. Despite these reforms, provincial assemblies still abound comprising of national members from each province. Each provincial assembly includes a governor for the province who is elected at general elections held every five years. There also exist over 150 local councils (Lipscomb et al., 1998).

The national political scene is such that each successive government in PNG has been a tenuous amalgam of disparate interests and allegiances and no one party has ever governed in its own right. The parties themselves tend to be identified by their or their members' regional base or the influence of their leaders or "big men" rather than subscription to a common ideology. There are as many as several thousand 'political' or tribal communities in PNG yet the national parliament can accommodate the elected nominees of no more than approximately 100 of these tribes at any one time (Colin Filer in Howitt et al., 1996; Filer et al., 2000). The question of membership of a particular political party is considerably less critical than the ability of an individual parliamentary member to distribute the greatest possible amount of
government resources to a local constituency (Filer et al., 2000). The application of the concept of nationhood to such a state can be viewed at best, therefore, as the statement of an aspiration.

In 2002, PNG held its sixth general election since gaining independence in 1975 and was contested by over 40 political parties. The prime minister, Sir Michael Somare, whose current party is the National Alliance, formed a government coalition made up of 13 political parties and some independent members of parliament (The Economist, PNG Country Profile, 2003).

The parliamentary election process, which is non-compulsory, is on a first-past-the-post basis but is fraught with difficulty as a result of the large number of candidates who regularly stand for election - in the 2002 general election, there were almost 3,000 candidates in contention for little more than 100 parliamentary seats. {The full complement of members of parliament is 109 (The Economist, PNG Report, October 2003)}. It is not uncommon for members of parliament to be elected with less than 10% of the total vote. For purposes of splitting the vote along tribal lines, there are frequently candidates put forward from each tribe in a constituency with a resultant dissemination of votes. These difficulties are compounded in as much as the larger clans appear to get parliamentary representation at the expense of the smaller clans (Donigi, 1994). Corruption throughout the process of election is also widespread and disaffection at election time, and generally in regard to elections, is common.
The proliferation of candidates, the relatively few votes needed to secure election, and the disparity of views and aspirations among elected representatives in parliament, render the system of government formation an unwieldy and unstable process producing a succession of inexperienced coalitions. It is commonplace for candidates to be elected only once (Lipscomb et al., 1998). The recognition of this fact also lends itself to political and other opportunism on the part of the individual members of parliament during their tenure. Moreover, the very high turnover in members of parliament renders it difficult to form a government with service credentials and experience.

The context of national politics in Papua New Guinea is, therefore, one of extreme instability, shifting alliances, and frequent coalitional changes. In 2004, the PNG Minister for Foreign Affairs, Sir Rabbie Namaliu, warned of political instability because of changing governments being "as great a liability (to PNG) as crime" (PNG Post-Courier, p.2, 18 June 2004). PNG political parties have, since independence, always been forced into coalition because no individual party is strong enough to govern in its own right. The parties tend to be differentiated as a result of their regional bases and there is a proliferation of independent members of parliament. Such party discipline as actually exists is so lax as to witness party members voting as independents - or as it suits them or ‘their bank balances’ (ibid.). Partly because of this situation and the fluidity of allegiances, there has been no sitting parliament
with the moral or political courage to tackle these deficiencies – despite considerable levels of criticism of the situation both domestically and from the international community.

This situation has also tended to render obsolete or, more damagingly, pointless, any attempt to effect cost-benefit analyses based on the Pareto\(^3\) criteria in the context of natural resource exploitation proposals in Papua New Guinea (Kelso, 1984). There is no evidence which has been available to demonstrate either criterion in as much as, while the conduct of resource exploitation has undoubtedly significantly benefitted the principals in each instance; on the basis of the evidence presented in Chapter 4, there is also no doubt that a significant number of PNG inhabitants are and will be worse off as a result of the conduct of such exploitation.

The difficulties experienced in resource exploitation management in PNG are partly as a result of the transitional nature of its society and the continuing reliance on the family and tribal structures. Riggs (1964) describes this stage of societal development as the prismatic phase and the extent of this stage is not finite.

The assertion which he makes regarding his observations of the fundamental impact which the family may have on such matters and entities as political parties, public sector recruitment, and allocation of market opportunities

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\(^3\) The so-called Pareto efficiency curve (after Vilfredo Pareto, 1848 - 1923) indicates points on a locus curve at which one aspect of production or process may be given up in order to get more benefit from another.
appears to hold particular relevance in the case of Papua New Guinea. The examination of PNG’s politics and administration cannot consequently be conducted without reference to this context and to that of tribal loyalties. This prevalence of shifting loyalties and allegiances in the political system is not unrelated to the fluctuating nature of clan alliances which were common in the traditions of the peoples of PNG. Moreover, the obvious difficulties experienced by governments, lawmakers, police, administrators, or, indeed, anyone supportive or desirous of a system of democratic administration or government in PNG, are greatly exacerbated by the nature of what is referred to as the ‘Wantok System’. As previously stated, PNG has over 850 distinct languages and those who speak the same language are known as wantoks (one-talk, in Pidgin English).

Dorney (1999) saw the proliferation of so many languages as being the most vital ingredient for any real understanding of PNG. He explained that the chain of loyalty for the average Papua New Guinean is, in this order, to his parents, the clan, the village, the tribe, the district, the region, and loyalty to the concept of the nation-state of PNG comes last. Dorney illustrated the general belief in PNG that the family and tribal groups, (the wantok group) come first and this contributed to political instability caused by shifting loyalties in Parliament; corruption and the diversion of public money to benefit one's wantoks; poor land utilisation; gang crime; and a generally ineffective public service.
As can be seen, under this system, which is a tradition deeply engrained in the community and prevalent throughout PNG; wantoks owe each other their primary loyalty. It is a system in which the concept of reciprocity is paramount and taking care of one’s clanspeople or returning favours is prevalent throughout the clan society. However, it contributes to – and, in some instances, constitutes – nepotism, corruption, and neglect of environmental, societal, or justice matters without which a democratic and even system of government cannot function.

The corollary of this system was, of course, that those outside of a specific wontok were - and mostly still are – regarded as hostile neighbours or enemies and, as such, were regarded with a suspicion arising from self-preservation instincts. This creates obvious difficulties in any attempt to establish a greater uniform concern for the protection of the environment or, indeed, any other joint effort.

The prevalence of the wontok system contributes to the difficulties in establishing a sense of national unity among Papua New Guineans and, consequently, constitutes a hindrance to the economic and social development in the country. The many ethnically disparate groups within the country have no tradition or sense of working together or helping each other and wantokism lends itself to a revival in neo-colonialism. It was the view of Professor Allan Patience that PNG remained a nation waiting to be built (Patience, 2005 c).
The wantok system, in relation to matters of monitoring and policing within the mining industry, also exacerbates the difficulties associated with the remoteness of the mining activities and associated access difficulties. They are further complicated by the difficulties relating to a history of major and lesser violence in PNG both on the part of sections of the community and also on the part of the army and police. In the late 1980s there were a number of occasions when members of the army and police took matters into their own hands and displayed their anger and frustration against the Government by attacking Parliament House and refusing to obey orders (Thompson & MacWilliam, 1992).

2.4 Environmental Pollution as an Externality in PNG

Since the publication in 1920 of Arthur Pigou's seminal work in the field, *Economics of Welfare*, there has been a greater appreciation and focus on the interconnectivity of economic activity and the impact of resulting pollution on the environment. Pigou's analysis established a distinction between the private costs of such economic activity and the full social costs of the activity on society as a whole. He saw the full social costs as being the sum of the private costs and plus any external costs which are precipitated (Turner et al., 1994).

Pollution, as economically defined, is seen as two-fold in its effects; the physical effect of the environmental damage and, secondly, the loss of welfare experienced by people as a result of that damage. The external costs as
defined by environmental economists encompass the costs experienced by people other than those whose behaviour has actually produced the costs (Field, 1997). For instance, an externality involved in the use of motor vehicles is the air pollution produced by such use and the effect that that pollution has on those who might breathe the polluted air. Moreover, while the majority of environmental problems are domestic in nature, their scope encompasses an international aspect which cannot be dealt with by a single national government especially when it is not a local pollutant (Dunn & Ingram, 1996).

A negative externality exists when two conditions prevail. These are (1) where the activity of one party causes to another party a loss of welfare, and (2) where no compensation is provided for that loss of welfare and, as stated by Pearce & Turner (1990), both conditions are essential for the existence of an externality. Consequently, if there is compensation by the actor causing the pollution for the loss of welfare caused, then that externality is internalised.

In the case of PNG, the damage caused by the mining activity may be chemical, such as damage done to flora, fauna, rivers and land by toxic waste contamination; or biological, as experienced in ill-health or species change. When these effects are experienced in locations extraneous to the polluting activity, they are deemed to be externalities.
It has become common practice for many multinational companies to relocate operations to states or territories in which the environmental controls are perceived to be more liberal than in the home country or in the existing host country (Dunn & Ingram, 1996). The question of responsibility for damage to the environment which is caused as a flow-on effect of industrial or resource exploitation activities and the determination as to the party or parties responsible for remedying that damage are matters which have presented and will continue to present major difficulties. In the case of the negotiations for the passage of the agreement relating to the North American Free Trade Area, a lobbying campaign succeeded in introducing specific stipulations regarding the dumping by Mexico of chemicals into the Rio Grande as such activity causes harm to Americans on the other side of the river (ibid.).

Specific interest groups, such as companies exploiting the natural resource, will not usually regard environmental quality as an objective of their activities unless they are compelled to do so which mitigates in favour of governmental intervention (Thampapillai, 2002). Tietenberg (2003) describes the concept of externalities as covering many sources of market failure and examination of negative externalities and damage to environmental quality caused by economic activity also raises the question of market failure where the market system fails to arrest such damage caused by development. The matter of whether it is appropriate in such instances for government intervention in order to conserve a natural resource is one which is argued extensively and, even with governmental intervention, political and administrative failure can
not only fail to alleviate the environmental damage but may, in fact, exacerbate the problem (Tisdell, 1993).

The relationship between the environment and the profit-orientated company is one which is, at once, dynamic and complex (Dunning, 1993). Specific societal costs and negative externalities, are matters which, in most instances, necessitate government imposed regulations to ensure that the resource exploiter assumes the responsibility for these indirect eventualities. Appleyard & Field (1998) have suggested that negative environmental externalities are reduced as a result of the imposition of implied expectations of responsibility which supports the argument for extension of such regulations imposition.

The relationship between industrial activity and the responsibility for the protection of the environment attains a higher level of intensity when the company is involved in mineral or natural resource exploitation. It is further accentuated when the effect on the environment is a result of negative interference, and the profitability of the operator is directly impacted by the level of attention and care with which it chooses - or is required - to address the question of the environment and environment remediation. Examples of this function are addressed in Chapter 4. The added implications of uncertainty regarding the additional investment required to address environmental remediation matters raises the company's concerns even further (Harberger & Jenkins, 2002).
As a result, the extent to which a company might regard matters of negative environmental impact as a direct responsibility and, therefore, as a cost; or view them as a literal externality having no direct implications for the company, becomes a matter fraught with questions of corporate morality as opposed to profit-motivated expedience. The company must then determine whether its approach to the environmental issues will be based purely on economic issues or involve a degree of moral assessment. Field (1997) states that, viewed from the point of view of the moral approach, degradation of the environment is a result of unethical or immoral human behaviour.

The complexity of this problem is exacerbated in countries such as Papua New Guinea where the country's economy is heavily dependent on resource exploitation. It is clear that, without balancing assistance, the greater the insistence on environmental protection the less attractive a resource exploitation opportunity becomes. That resource exploitation and minimal environmental attention occur most commonly in developing countries is not coincidental. On a microeconomic level in PNG, the benefits which flow to the local population from the exploitation of the natural resource are commonly confined to the local traditional landowners while the negative externalities are visited upon a greater population with no claim to the benefits arising therefrom (Ballard, 1981).
The causes which precipitate environmental problems in the world are identified by Princen & Finger (1994) as being due to unsatisfied needs of a social and political nature and, in particular, the needs of the world's poor. Attempts to satisfy these needs in the late eighteenth century spawned the industrial revolution. The subsequent spread of industrialisation witnessed the proliferation of manufacturing facilities and natural resource exploitation and the attendant polluting emissions and environmental damage (Pearson & Payaslian, 1999).

The conflict involved in such attempts to satisfy these needs is now nowhere more evident than in instances where the land of indigenous peoples in developing countries is the subject of resource exploitation. The dilemma is also typified by the allegations of developing countries that rising international environmental standards are creating an unfair obstacle to their economic development and that the environmental question and recently-introduced environmental standards did not exist during the time the developed countries experienced the benefits of unfettered industrialisation (ibid.).

Despite the frequency of such conflicts between the interests of the indigenous peoples and the aims of the resource exploiting companies (Connell & Howitt, 1991), mining activities continue to rank highly in the considerations of the governments of these nations, as is the case with PNG. Such activities are frequently seen by these governments as the means by which the same degree
of industrial and technological advancement as enjoyed by the developed
countries might be achieved for their own people. It has become
commonplace for decisions made by the government of PNG relating to
resource exploitation to result in uncompensated negative externalities and the
proliferation of such instances have precipitated a heightened awareness of the
necessity to ensure that occurrences of negative externalities are properly
addressed.

It is becoming progressively more difficult for companies to avoid
responsibility for damage to the environment - directly caused or indirectly
precipitated by their actions. When referring to the production of electricity
from various sources such as coal, oil, gas, or nuclear power, it has become
common to utilise the 'externality addition approach' or the full cost approach
where the costs - both the private cost and external cost - of the supply are
estimated and priced in order to reflect and compensate for related damage to
the environment. This exercise can have the effect of providing either a cost
or a benefit (surcharge or credit) to be attached to the charge per unit in
accordance with the relative impact on the environment. This externality
addition approach is likened to the 'polluter pays principle', endorsed by the
Organisation of Economic Cooperation and Development (OECD) in 1975,
whereby the entity which precipitates the environmental damage is required to
pay the costs of avoiding that damage or containing the damage within
acceptable limits (Pearce, 1993; Folmer & Gabel, 2000).
This discussion is conducted in the context of the realisation that popular demand for the elimination of pollution is not considered to be an economic practicality. Pearce & Turner (1990), point out that the laws of thermodynamics suggest that achieving zero pollution would require the complete cessation of all economic activity and it is, therefore, illogical to suggest or demand such an outcome.

The reality of this situation was recognised and acknowledged by the PNG government by the passage in 1978 of the Environmental Contaminants Act. This Act acknowledged the fact of environmental pollution as a result of commercial activity and it provided for its management by allowing for the issue of licences for the pollution of water, air, and land. It also instituted prohibitions and imposition of penalties in relation to breaches of the environmental guidelines. The relative success or lack thereof of that programme is a central aspect of the examination herein and can be judged by the evidence presented in Chapter 4.

This pragmatic approach is further developed by Ascher (1999) with the recommendation that governments take responsibility for not only ensuring that resource exploiters are held accountable for the indirect effects of their activities on the environment and society but that they (the governments) also introduce a reward system for those companies which provide positive externalities. What Ascher (1999) refers to as pollution charges reflects the polluter pays principle adopted by the OECD and he recommends that these
charges be - by compulsion if necessary - regarded by the resource exploiters as an intrinsic cost of the total operation. Failing such a requirement, Ascher is of the view that the resource exploiter will succumb to the temptation of overexploitation in pursuit of additional profits despite the high cost in societal terms.

2.5 Environmental Policy Design and Decision-making in PNG

Roberts (2004) describes policy as a set of principles and intentions to guide decision making and facilitates the matter of decisions made by politicians to be implemented by public servants. However, the difficulty involved in establishing such policy in newly independent and former colonial territories is circumscribed by the delicate question of legitimacy and the desire by the decision-makers to be seen to be masters of the new nation's destiny. In PNG there is, moreover, the added difficulty of the extreme degree of social and political fragmentation involving thousands of traditional communities, only a handful of which are represented in the PNG parliament (Filer et al., 2000).

Also in the case of PNG - as with many former colonial territories - the pre-independence economy was heavily orientated towards export production and the infrastructure and economic services were organised accordingly. As a result, there was little initial opportunity for digressing from that policy direction or the dependence on export revenues and externally imposed trade terms. This has meant the emergence of what was, in effect, a drive to increase exports while continuing to be relatively dependent on foreign aid.
Such a situation is further exacerbated by the instability of a new state, the inevitable insecurity of new and inexperienced ministers and those responsible for the policy decision-making and implementation, and the common lack of election policies of the new incumbents (Ballard, 1981).

In a relatively early stage of the growth of concern for the environment the then Professor of Economics at the University of Sussex, Geoffrey Heal, enquired as to whether a 'market mechanism' would, in fact, determine in a sensible manner the management of resources (Pearce & Rose, 1975, p. 118). Among his concerns was the manner in which the non-renewable resource was managed in responding, not only to current markets, but also to future markets and to "risk markets". In this he was referring to the context in which economic decision-making relating to future events involved considerable political risk for the decision-makers. As we have discussed, this is particularly relevant in the case of a newly established state. While Heal's emphasis was on the longevity of the resource in the context of the expectation of future prices, the allusion was also relevant from the viewpoint of the immediate political and personal repercussions for a governmental decision-maker.

Field (1997) also emphasises the importance of effective design of public policy to facilitate efficient environmental protection and control. In postulating that the majority of public policies and programmes for environmental protection may in fact be badly designed, the consequence is
the waste of money and minimal or no benefit to the environment. In other words, the total costs exceeding the total benefits of such public policies making the net present value of benefits of such public policies negative. He cites the frequency with which policy makers and administrators pursue ineffective policies which have been declared by them to be effective and which merely results in further economic waste. He, therefore, highlights the critical importance of environmental policy design for effectiveness and efficiency.

The design of effective environmental policies is the product of the political process and provides consideration not only for the environment but for the people affected by the policy decisions. That process involves the interaction of peoples and groups in contending for influence and control and it witnesses shifting allegiances in instances of the collision or divergence of interests (Field, 1997).

However, the determination of such policies is, by definition, and to a greater or lesser extent, impacted and affected by public choice considerations and in any analysis of environmental policy determination the impact of those various interest groups on the political choices made by governments is to be considered. In the context of developing countries such as PNG, in order to reduce the conflict with environmental concerns, the high growth expectations must be balanced by least-cost environmental policies (da Motta, 2001).
Field & Field (2002) cite the premise that people pollute because it is perceived to be the cheapest way of solving the problem of disposal of waste products as the environment is regarded as a free good by them.

This realisation applies equally to government and bureaucracies as it does to companies exploiting natural resources or otherwise precipitating damage to the environment. The consideration of the political choices as influenced by organised interest groups or politicians, therefore, leads to the abandonment of the Pigovian concept of government as a benevolent dictator and recognition of the maximisation of self-interest motivation on the part of politicians, governments, and interest groups (McNutt, 1996).

But the environment is not a free good but a composite asset providing various service flows. The long-term objective of development should be to minimise the undue depreciation and degradation of the environment. While various methods and policy instruments have been recommended in an effort to arrive at a system of pollution control, the polluter will not comply with any such system unless an efficient monitoring and policing model is effected. This might be a system based on the polluter-pays principle or some other system of Pigovian tax incorporating compulsory compliance on the part of the polluter (Sathiendrakumar, 1995) although Sathiendrakumar is of the view that an optimal Pigovian tax is not capable of being calculated and advocates the use of tradeable pollution permits.
Sathiendrakumar (1995) recommends the introduction of a system of marketable pollution permits as a policy instrument to be used in the control of industrial air pollutants as such a system would, in his view, have benefits such as acceptability from the points of view of government and industry, cost-effectiveness in comparison with other policy instruments, flexibility in regard to changing conditions, and ease of administration.

Interest groups as an influencing factor on public policy raise a greater diversity of issues and articulation of needs than can be addressed by political parties (Wilson, 1990). Yet the influence of a particular interest group may far outweigh that of other interest groups and, indeed, individual political parties, providing them with the ability to sway governmental attitudes. This question of the relative power of the interest group impacts on its ability to subvert the common good or to confound the opinion of the majority and thereby unduly influence the policy-making function of government (ibid.)

The emphasis on such concerns is accentuated by the - at least notional - claims to social egalitarianism on the part of governments of most of the developing countries (Livingstone, 1989). Livingstone further argues (p.249) that, subject to the existence of a "sufficiently sophisticated" administrative facility capable of adequate monitoring of the environmental impact, foreign direct investment brings more benefits to the host country than it brings disadvantages. The qualification which he introduced regarding the level of sophistication, however, is precisely that which highlights the deficiencies in
the PNG administration of FDI in relation to the environment and the mining industry in Papua New Guinea.

One of the ways in which an element of control may be effected over the operations of a foreign company by a host government is that of minority ownership. Nevertheless, while this is a process utilised by the PNG government and has been an integral part of its resources sector policy since independence, the ostensible purpose in this instance appears to be that of greater revenue retention from the investment operation rather than the control of the operation itself or the conduct of its environmental practices. This would appear to be particularly so due to the administrative machine being - understandably in the case of PNG for the reasons already stated - less efficient than a similar administrative function in a developed country. In September 2002 departmental heads and provincial administrators were urged by their Public Services Minister, Dr. Puka Temu, to translate Government policies into plans with a view to actually achieving results and alleviating administrative difficulties experienced in PNG (Palme, 2002).

The process of ensuring effective decision-making is precipitated on a full understanding of the possible and likely consequences of the decisions and the process of public sector analysis for environmental policy matters revolves around efficient cost-benefit analysis. The principle applies equally in the public sector in determining effective public policy and in the private sector where the principal focus is on profitability levels (Field & Field, 2002).
the instance of natural resource exploitation in PNG it is a function requiring mutually supportive activities and monitoring on the part of both sectors. In determining policy for the coordination of the ongoing national development and, in particular, exploitation of the development of the resources sector, the policy-makers in PNG are required to balance their judgements regarding choices and the concomitant trade-offs (Temu, 1997). It is a necessary function involving compromise but it is generally believed possible to establish reasonably efficient policies for the control of externalities (Baumol & Oates, 1975). However, without the attendant facilities for monitoring and policing the adherence to the policy the exercise is rendered futile.

The modern process of designing environmental policy is predicated on an assumption of the ability of promoting economic development while maintaining sustainability. This concept, as outlined in the Brundtland Report (Brundtland Report, 1987) posits that the needs of the present can be satisfied without compromising the capacity of future generations to satisfy their own needs. This introduced the concept of care for future generations in the handling of resources today from the perspective of developing world problems and the demands of the modern environment-orientated lobby (Cahill, 2002). While Roberts (2004, p.74) sees the underlying principle espoused in the Brundtland Report as a “statement of faith rather than a statement of fact”, it nevertheless encapsulates a premise without which no substantive forward progress can be realistically projected.
In Dwivedi & Vajpeyi (1995), the Brundtland Report is interpreted as a qualitative advancement to the point of conveying the vital links which exist between natural environmental condition and economic achievement and that the one could not be sustained without the other.

However, such high-minded concepts and aspirations as contained in the Brundtland Report assume an added and extremely complex dimension when applied to the difficulties faced by PNG policy-makers in relation to the exploitation of the country’s natural resources. It is also exacerbated by factors common to many developing countries such as externally determined terms of trade, an established primary dependence on export earnings, and a dependence on foreign aid (Ballard, 1981). In such circumstances, the question of ‘sustainability’ must apply in the context of the collateral damage or negative externalities rather than the non-renewable resource which is being exploited and there is a tendency for public opinion to acclimatise itself to dramatic environmental damage and associated difficulties so long as the consequences are sufficiently distant (Roberts, 2004).

2.6 Conclusion

When taken in the context of the mining industry in PNG, PNG policy-makers are faced with a multi-layered dilemma. Firstly, the (usually foreign) company exploiting the resource is, in an abstract sense, removed from the consequences of its actions. As a result, there exists for it a tendency to
concentrate on the maximisation of the private profitability of its operations. Therefore the policy-makers must incorporate such regulatory impositions as will ensure – with proper policing – that the collateral impact of the operation on the environment is controlled and minimised.

There is also the situation of the local landowners who, while benefitting directly and immediately from the company’s operations and who, as a consequence, may be disinclined to canvass limitations to the operation so as to provide a greater degree of protection to the environment are also impacted negatively by the deleterious effects of those operations. Despite these negative effects there is a tendency on the part of the local landowners to ignore these in order to receive the immediate cash or kind benefit which accrues to them as a result of their consenting to the operations.

And, thirdly, the other party to suffer from negative externalities are those with no direct input as to the decisions made, who receive no direct benefit from the operation of the company’s activities and, yet, who experience the greatest suffering as a result of negative externalities precipitated by the resource exploitation.

The development and design of environmental policy cannot address all the competing interests involved in the issue but it must endeavour to ensure that those policies which are determined have the attendant implementation measures for effective monitoring and control.
Chapter 3. Review of the Literature

3.1 Introduction

Increasingly, over the last thirty years, there has been a growing body of literature from economists who have studied the changing face of Papua New Guinea and the impact which resource exploitation in general and mining in particular has had on the economy and environment of that country. This chapter will examine that part of the literature which is deemed to be relevant to the study in hand, i.e. the examination of the motivational influences and context which might have precipitated the current environmental conditions as a result of governmental action and inaction. The principal classification differentiation will be as between contributions to environmental damage analysis and the analysis as to policy failures.

The great majority of the analyses prepared in regard to environmental damage experienced in Papua New Guinea has tended to focus on descriptive analysis of the effects of the mining industry and analysis of the fact of the degradation which has resulted from such activities rather than the contributing policy factors which precipitated those effects. Many of these analyses - particularly those emanating from non-government organisations such as the Mineral Policy Institute (MPI) and the Berne Declaration - employ a judgemental approach to a description of the subject matter with an emphasis on engineering the cessation of such activities.
3.2 Ethics of Conservation

As mentioned earlier in the case of the OK Tedi mine formerly operated by BHP Billiton; once BHP Billiton had disposed of its interest in the mine and control of the mining operations had been assumed by local interests, "the NGO and legal pressure on the mine evaporated" (Callick, The Australian Financial Review, 2 February 2005, p.53). In light of such 'evaporation', the motivation for the continuous vitriolic and highly critical legal and intellectual vilification of BHP Billiton for its conduct in the mining activities at Ok Tedi must be seen in retrospect as being questionable at best and may possibly have been no more than an exercise in politically correct cynicism. It would appear that the import of Thompson & MacWilliam's (1992, p177) assertion that the "ethics of conservation are interdependent with the reality of political economy" has been lost on these actors or its relevance is perceived only in the context of international corporate activity. Thompson & MacWilliam went further and proclaimed that any inference suggesting that no environmental degradation would have eventuated without the interpolation of capitalist activity was, in fact, 'nonsense' and confirmed that the PNG people were, as is most of mankind, interested principally in immediate returns on their endeavours.

However, a polemic based purely on the premise that the ultimate resolution to further environmental degradation is the complete cessation of all development or resource exploitation activities, while possibly aesthetically attractive, is by definition both unrealistic and counterproductive. Such
approaches, moreover, tend to ignore or play down the undoubted benefits which do emanate from such activities to the local inhabitants while emphasising the environmental and social cost of the exercises as perceived by the proponents of the argument.

While it is recognised that environmental economics as a specific discipline originated with general tendencies towards such judgemental approaches as to the morality of resource exploitation activities rather than objective analysis of ‘what is’: as has been argued by Chapman (2000, a), and supported by Pearce & Turner (1990), the study moved away from such approaches with the application of the principles in Pigou’s Economics of Welfare. The approach which Pigou advocated emphasised the definition of economics involved in exploiting environmental resources as objective and positive science.

Thompson & MacWilliam (1992) examined the effects and impact on the environment of the activities of CRA Ltd. and BHP Ltd. in the mining activities on Bougainville Island and at Ok Tedi. In regard to the Panguna mine they asserted that the degradation of the land contributed to the increased scarcity of the resource base, the precipitation of the revolutionary activity which occurred on Bougainville Island, and the ultimate closure of the Bougainville mine. What Thompson & MacWilliam were not to know at the time was the continuing calamitous vortex into which Bougainville and its people were to become immersed over the next thirteen years. In the general context of PNG, Thompson (1994) noted that despite its abundance of natural
resources and mineral revenues in the 90s, the country faced major challenges to its development and growth.

Following the closure of the Panguna mine and the cessation of the savage civil war fought against the PNG government during the 1990s which coincided with the closure; the man who created the secessionist Bougainville Revolutionary Army which fought that war, Francis Ona, in 2004 proclaimed himself king of Bougainville and declared Bougainville to be an independent kingdom. This development coincided with a move, which had been orchestrated by the United Nations and the Australian and PNG governments over many years, to establish an autonomous and democratically elected government for Bougainville (McLeod, 2005).

The result of the elections held in June 2005 as a consequence of those international efforts to establish the new Bougainville autonomous government was to see the election of a new President for the Island, the choosing of a new flag and anthem for the Island, and the prospect of a referendum to be held in 10 to 15 years on the question of whether the Island would totally secede from PNG and assume total independence (Jones, 2005).

However, in midst of the celebrations held on the occasion of the establishment of the new government in Bougainville, the newly sworn-in President of the Island, Joseph Kabui, raised the prospect of early talks with the PNG Government and Bougainville Copper Limited, the owner of the
Panguna mine, with a view to a resumption of mining at the Panguna copper mine. In other words, the prospect of reopening the mine which gave rise to civil strife lasting more than fifteen years and precipitating the loss of more than 10,000 lives (Philemon, 2005) and the prospect of the revenues potentially realisable from the mine's renewed activities was prominent on the new President's agenda on the first day of autonomy for the region and was sufficient to subsume ethical considerations which might have occurred as a result of the horrors precipitated previously.

Further weight was lent to the prospect of the mine being re-opened at the end of July 2005 on the occasion of the death of Francis Ona {from malaria, typhoid, or foul play (Sydney Morning Herald, Treasure Island, July 30, 2005)} when the chairman of the Bougainville mine, Peter Taylor, declared that company plans to divest itself of the mine might be revisited as a result of recent positive developments such as the elections held in June of that year (Freed, 2005).

3.3 Nation-States and the Environment

The fact of the establishment of a separate autonomous region raises again the question of the danger - or, at least, the propensity - of the relatively new nation-state of Papua New Guinea degenerating into a conglomeration of such autonomous regions based along tribal affiliations or resource wealth location. Howitt et al. (1996) referred to the tensions arising between indigenous peoples and the nation-state as a result of this question of resource sovereignty
to the point whereby claims of national sovereignty are made, and based, solely on the very location of an identified natural resource.

These claims are made in direct opposition to similar claims made by the nation-state itself as to its right to the enjoyment of the benefits expected to emanate from exploitation of the resources in question. In this regard and notwithstanding the tortuous and tragic route involved in progressing toward its current political position; Bougainville is a case in point of a specific resource location ultimately determining the claim - and achievement - of autonomy for the region concerned.

Such quests and such achievement of regional autonomy redefine the political, economic, and cultural relationships between the nation-state and its indigenous peoples. Furthermore, because the indigenous or regional claims to the sovereignty over a particular resource predates, as a rule, the similar claims of the nation-state under its constitution (Howitt et al., 1996) they carry, by definition, the potential for the ultimate collapse of the state which was constitutionally established to embody those same various regions within its borders.

As explained by Thompson & MacWilliam (1992), despite the environmental damage and economic and social chaos caused as a result of the Panguna mine operation – unimaginable at the time of the granting of the licence to mine - its closure, in turn, caused a decline in the PNG Government’s tax base and
receipts from exports and was instrumental in forcing a relaxation of the environmental standards required of later mining operations and, in particular, that of BHP’s Ok Tedi operations. Thompson & MacWilliam predicted, specifically in relation to the Ok Tedi mine, that that relaxation would lead to further siltation and pollution of the Fly River and its tributaries and precipitate further environmental devastation of the Fly River basin. This study and others attest to the prescience and accuracy of their prognosis.

In their incisive analysis of the spiral of environmental degradation in PNG, Thompson & MacWilliam perceived the PNG government and its instrumentalities not as malevolent or manipulated agents from a motivational standpoint but rather that the cauldron in which the State instrumentalities make their determinations is one bereft of sufficient information on which to make these decisions and in which conflicting forces are constantly at play. Moreover, they viewed any such perceptions of malevolence or manipulation or attempts at such characterisation as being somewhat irrelevant.

This determination was offered in the context of the environment being an element of human action. Moreover, the view of human praxis as being opposed to the environment as a force of production while coincidentally recognising humanity's total dependence on the survival of the environment as a healthy interaction between matter and labour was elemental in their analysis. They regarded the then relevant literature as being largely representative of a moral ethos which proscribed the possibility of an
alternative environmental ideology pertaining to the reality of different peoples at different times and correctly viewed the trappings of capitalist activities as being forever inimical to the land, its people, and their traditions. They recognised the uncertain and irreversible nature of the consequences of the decision-making process in a context of the inevitability of a conflict between development and the environment.

In the wide-ranging analysis of Howitt et al. (1996), the dangers and implications inherent in the emergence of internal resource-related claims being made by indigenous peoples against the nation-states, including PNG, were seen as matters of crucial importance. They point out that the resolution of such matters have increased in complexity by the fact of globalisation and the implications thereof and the intrusion and involvement into the indigenous and local politics by international bodies such as the United Nations and the International Labour Organisation.

During parliamentary discussion on 8 June 2005, the possibility of that to which I have alluded earlier, i.e. the collapse of the nation-state and a return to a more tribally-orientated society for PNG, was raised by the PNG Opposition Leader, Peter O’Neill, when he said - referring to the Bougainville autonomous government celebrations - that there was a serious possibility of similar celebrations (of breakaway PNG provinces) in the near future. It was a subject also addressed more fully by Windybank & Manning (2003).
Their assertion and focus emphasised the vulnerability of the relatively embryonic PNG society. They viewed the fact of 'nationhood and centralised government' having been imposed on PNG by external forces in response to a perception of a desire for nationhood as a potentially fatally-flawed ambition - particularly in light of an absence of a proper understanding or appreciation of the difficulties entailed in such an imposition on a geographically, and linguistically disparate tribal society. It is relevant to note, in the context of the general acknowledgement of PNG's early independence being a critical mistake, that, following concerted overtures from the United Nations, it had been Michael Somare who had pressured the then Australian Prime Minister, Gough Whitlam, to bring forward the planned introduction of independence to PNG (Forbes, 2002).

3.4 Incapacity and Accountability Evasion

Windybank & Manning (2003, p6) were critical of the "bloated and inefficient public sector" in PNG which accounted for approximately half of the total formal workforce and the public payroll and constituted approximately 40% of all government expenditure. They asserted, however, that, of the total number of public servants employed by the State, 10% to 15% were "ghosts" moving from one department to another collecting multiple paychecks and costing the government approximately A$45 million per annum.

The criticisms of successive PNG governments levelled by Windybank & Manning (2003) extend to that which asserts that the weakness of central
government in PNG is such that any possibility of attaining national cohesion is threatened and the escalating crime, civil unrest, and social breakdown reinforce a downward spiral which becomes a self-fulfilling continuum. As with commentators such as Hughes, they were, moreover, highly critical of the detached approach by the Australian Government and AusAID in the manner in which the provision of financial aid to successive PNG governments since the establishment of PNG independence was undirected and effectively devoid of accountability in its administration. This approach, in effect, rendered the likelihood of the existence or inducement of Ascher's (1999) 'accountability evasion' syndrome more endemic.

To the extent that the detachment mentioned prevailed in a context of having the appearance of respecting the right of PNG to make its own determinations as to how the aid was administered was seen as a sop to those accustomed to levelling accusations of condescension or neo-colonialism at the slightest perception of interference or provision of political or economic advice to the aid recipients. Windybank & Manning (2003) assert that the result of that detachment is the absence of meaningful long-term development within PNG and the potential continuation of corruption and impoverishment within PNG leading, in the worst case scenario, to anarchy.

The continued occurrences of what Windybank & Manning regarded as attributes of a failed state dictated in their view the necessity for Australia to re-examine its relationship with PNG and determine a new approach to its
commitment to PNG development. Any such commitment they believed was required to be devoid of over-sensitivity to accusations of undue influence and pressure but should be unabashedly orientated toward encouragement of administrative, social, economic, and political change from within.

Failure to do so would, they asserted, lead to continued and further profligacy on the part of the PNG public service and political system which had absorbed and continued to absorb the principal part of the financing available to the administration. Most of that financing was provided from borrowing following on from a series of budget deficits. The mineral rents accrued by successive PNG governments were viewed as being an encouragement to continued profligate tendencies in spending and borrowing patterns and those borrowings previously effected contributed to a public debt which had not only become unsustainable but had been either spent unwisely or had disappeared.

Political appointments and public sector jobs were seen by Windybank & Manning (2003) as constituting a major part of the overall PNG economy. These appointments and jobs, they stated, are funded by mineral revenues and international aid. The monies received in this manner provided the basis by which the government grows the bureaucracy. The appointments within and to the bureaucracy are keenly contested to the point where they allege that the appointment process has become a principal way of accessing state finances.
The manner in which such appointments are determined is also a frequent basis of acrimony within the state and the PNG parliament. Accusations of corruption, nepotism, and cronyism are often levelled at those in positions of influence regarding such appointments. Prime Minister Somare is principal among those accused of such interference and the appointment of members of his family to positions which are under the aegis of the government has caused heated debate in parliament (PNG Post-Courier, 9 June 2005).

Sir Michael Somare has also strenuously expressed the view that local journalists were betraying their country and that, having previously supported press freedom in the 1990s, he now supported the concept of media censorship and legislation to impose limitations on the freedom of the media. The catalyst for this declaration was the release of news reports on corruption and the finding by NGO, Transparency International, that PNG was the 15th most corrupt country in the world ('The West Australian', November 13, 2003) and that organisation, in December 2004, assessed that Papua New Guinea was losing between K500 million and K1 billion per annum as a result of corruption (Lasibori, 2004).

Windybank & Manning (2003) viewed the political culture of the 'big man' syndrome, the attendant tradition of gift-giving, the custom of local patronage elevated to a national scale, and the consequent tendency toward administrative bias and corruption, as the biggest challenge to constructive and meaningful change in PNG. In the context of the recent social, cultural,
political, and law and order disasters in the nearby Solomon Islands the
concerns raised represent a clear and real danger requiring immediate
attention.

The frequent occurrence of, and the growing trend toward, the PNG
Government assuming equity ownership positions in new or existing resource
exploitation situations constitutes usurpation of local indigenous rights to
resource wealth in a similar manner to that effected by corporate entities -
albeit, in this instance, it takes the guise of an action of a national government
purportedly acting in the interests of all its citizens. Indeed, the efforts of the
PNG government to reassert national priorities in resource development
projects (Howitt et al., 1996) further illustrates remaining partisan approach to
ownership of resource wealth within the various regions and the difficulties
encountered in establishing a sense of common ownership.

While in a general sense, development of natural resources is considered a
desirable pursuit on the part of national governments in the interests of their
people, the determination of what a national government deems to be in the
national interest does not necessarily have any connection with the interests of
local indigenous groups. Moreover, not only is there no assurance that these
determinations of a national government will be conducted in a manner
devoid of self-interest or corruption; there is also the commonplace
occurrence of government-imposed sanctions in such instances which
negatively and permanently impact on local tribes and traditional owners (Howitt et al., 1996).

Pitts (2002) found that years of incompetence, greed, and corruption had precipitated a maelstrom for the economy of Papua New Guinea and she compared the basic wage in PNG as determined by the PNG Minimum Wages Board as being approximately 2% of that of the PNG Prime Minister.

Prime Minister Somare, meanwhile, in an address at the opening of the PNG National Fraud and Anti-Corruption Squad office in Konedobu in 2004, further emphasised the growing demand for reform necessary in order to combat corruption. He stated that misappropriation and the fraudulent use of public funds by those in positions of trust was still rampant and continued to go unpunished (Post-Courier, 4 October 2004).

The occurrence in PNG of transparent government which is capable of being trusted with responsibility for disciplined and responsible discharge of the duties required of elected officials and appointed public servants is rare. The conduct of projects initiated by the community or by government remain dependent on international donor aid. The international donors themselves become targeted as scapegoats when difficulties in administration are encountered. These entities include the Australian government, the World Bank, and the International Monetary Fund. This tendency has arisen and is accentuated as more demands are made by the donor institutions on PNG and
its government for more fiscal and governance discipline (Pitts, 2002). Large sections of the capital, Port Moresby, continue to be controlled by 'raskol' gangs who rape, rob, and intimidate in face of an ineffectual police force (Forbes, 2002) and the capital, Port Moresby, has one of the world's worst crime rates and unemployment rates (Pitts, 2002).

It is argued (Pitts, 2002) that an increasing number of Papua New Guineans believe that they achieved independence prematurely; that remaining as a self-governing territory under administration from Australia until a greater appreciation of democracy and open and transparent governance had become inculcated into the administrative and political system and psyche would have better served the people and the country.

The reality was rather the devolution of administrative and legal authority on a non-representative minority of expatriates and Papua New Guineans who were expected to forge a nation from a furnace of ineffectual administrative systems, national laws in conflict with customary and local laws, a growing lawlessness and disregard for those laws - both local and national - and a diverse and disparate range of cultures and languages.

Pitts (2002) cites a plethora of instances of corruption and administrative failures which continue to plague the country. These instances abound in a context of growing unemployment, diminishing educational opportunities, ongoing failures in crime containment efforts, interference and incapacity on
the part of inefficient and corrupt administrations, and continuing failures and insolvencies of government organisations and entities slated for privatisation. She bemoans the fact that the citizens of Papua New Guinea do not enjoy transparent and trustworthy leadership which ensures the prosecution of fraudulent conduct in government and administration. In her analysis the economy and government and community initiatives for development continue to be donor dependent and attempts to prosecute those responsible for escalating corruption within government circles meet with failure.

The failure to do so is often because of the practice of accountability evasion. This occurs in instances where government officials distribute economic benefits with low-visibility mechanisms thereby making it difficult or impossible to properly attribute the responsibility for the decision in question. When the practice of accountability evasion on the part of the officials involved is factored in, there at once appears, not only the initial inefficiency or deficiency precipitating environmental degradation; but, also, there then arises the difficulty of sheeting home responsibility which renders the possibility of repetition of the inefficiencies not only possible but even more likely. This practice occurs both in situations of exploitation by state agencies and by private enterprise and the combination, in many instances, can be perpetuated by a degree of autonomy, enjoyed by the agency, which is actually heightened by the very lack of transparency and accountability mentioned.
Ascher (1999) emphasises the importance of natural resource exploitation in developing countries as the major opportunity for those countries to achieve higher levels of general prosperity for the country as a whole. He describes the attitudes of the governments in such countries as cavalier in their approach to the development and extraction of natural resources. Attitudes such as this are facilitated by accountability evasion by various means. Ascher asserts that, apart from the intrinsic low transparency of natural resource extraction processes, governments will employ tactics such as the introduction of policy failure in order to further obfuscate responsibility and reduce accountability even more. Many such resource policy failures are maintained and promoted by officials despite continuing evidence of the consequences of unsound resource exploitation.

In Larmour's (1997) analysis of corruption in the South Pacific region, he specifically points to various instances of 'grand' corruption in PNG and ruminates that increased evidence of corruption may mean that a greater degree of corruption is occurring or that more corruption is being revealed and concludes that it is probably both. He makes the point that politicians in PNG - and indeed other South Pacific nations - accused of corruption are accustomed to defending their actions by attributing a mantle of traditional acceptability on the conduct in question - such as gift-giving. The ranks of such politicians alleged to have been involved in corruption and who have claimed their actions to be no more than traditional gift-giving are extensive and include several recent prime ministers of PNG.
Larmour, however, clearly established a distinction between a gift, which is a token and is offered gratuitously and publicly, and a bribe, which is substantial, demanded, and effected in secret. In the context of 'grand' corruption he referred to the Barnett Commission's finding of the frequency of politicians actively soliciting contributions for their parties or political activities from companies and noted the questionable ethical nature of PNG's Electoral Development Fund which provided direct patronage to members of parliament. In this and in misuse of funds matters brought before the PNG Leadership Code Tribunal, Larmour found that such funds straddled a morally indeterminate line where public office was used for private gain and electoral advantage.

That such a fund is extant in itself casts a shadow over the legitimacy of the election process but the fact that increases in these 'slush funds' should be the subject of parliamentary debate is a matter of concern in the context of free and fair elections. A recent report suggested that the MPs' electoral allowances - widely used during elections for purposes of bribery and political inducements - may be substantially increased before the 2007 elections (Patience, 2004). The situation was labelled by Patience as the prostitution of Papua New Guinean democracy.

In 2002, AusAID provided A$10 million to PNG in an effort to ensure a free and fair election. The fraud, death and bloodshed which in fact occurred
before and during the election made a mockery of the Australian aid (Forbes, 2002). In a review released in February 2003 AusAID itself proclaimed that the election support programme which it had funded had been largely a waste of taxpayers monies and recommended that the electoral aid be suspended (‘The West Australian, February 19, 2003).

These difficulties are exacerbated by an apparently irrational and erratic approach to the quest for, and receipt of, aid. In August 2002, in his meeting with the Australian Prime Minister, John Howard, aware of the critical nature of ongoing support from Australia for PNG’s economic and social future and in an effort to further expand Australian aid to PNG - Sir Michael Somare emphasised the bond with PNG’s former colonial master. Yet, little more than a year later, in October 2003 while hosting a dinner for the visiting Malaysian Prime Minister, Mahathir Mohamad, Sir Michael saw fit to denounce Australia and its assistance as being overly encumbered with conditions and blamed Australia for PNG’s aid dependency (‘The West Australian’, October 25, 2003).

In the next chapter the nature and extent of the damage in the instances of the chosen mining operations will be discussed.
4.1 Placer Dome’s Porgera Gold Mine

The Porgera gold mine is located in Enga Province about 130 kilometres west of the town of Mount Hagen, in the midpoint of the Western, Southern and Eastern highlands of Papua New Guinea, and about 600 kilometres northwest of Port Moresby (Figure 4.1). The mine is operated under the terms of the mining development contract (“MDC”) between the PNG Government and
the Porgera Joint Venturers. The MDC specifies the annual rents to be paid for the mining lease and the compensation to be paid to local landowners for the “use” of their land (placerdome.com, 2003). The special mining lease under which the mine operates expires in 2019 and covers approximately 2,240 hectares and permits and leases have also been issued for purposes of campsites, airstrips, and waste dumps. The Mine is operated under the PNG Mining (Safety) Act of 1992 and the Mining Regulations of the Mining Inspectorate.

The area surrounding the mine is extremely rugged and mountainous terrain which experiences a high level of rainfall with a tendency for landslides. Because of such conditions and the consequent difficulties in constructing a dam to contain the tailings (the residue after completion of the mine processing operation) to help control the effluent and residue of the mining operation, the Papua New Guinea Government approved riverine disposal as the most appropriate method for treated tailings and waste rock.

The mine is operated and principally owned (50% ownership) by Placer Dome (which, in turn, is now owned by Barrick Gold Limited). Other joint venture interests include Goldfields Limited (25%), Orogen Minerals Limited (20%) - a publicly-listed company floated by the PNG Government in 1996 to privatise many of its resource assets (Anderson & Moramoro, 2002) - and the Enga Provincial government and landowners through the medium of Mineral Resources Porgera Pty. Ltd. (10%). The mine employs approximately 2000
persons, most of whom are PNG nationals (placerdome.com, 2003). Production began in September 1990 and, following a period of seven years of underground mining, an open pit mining operation was initiated in 1997. Production in the year 2000 totalled over 900,000 ounces of gold and in 2001 the mine produced 760,622 ounces of gold. The Porgera gold mine is one of the largest in the world and is expected to produce 11.3 million ounces of gold over its 20 year life.

However, in the short period of its operation, the level of pollution associated with the mine is arguably worse than that of the notorious Ok Tedi mine. The level of toxic and hazardous waste discharged by the mine is far in excess of the levels permitted under Australian or PNG law. These discharges have been measured at levels considerably in excess of PNG limits (IIED & MPI). In a 2001 study (CSIRO, 2001) the CSIRO found that heavy metal enriched tailings are being deposited in the lower reaches of the Strickland River in far higher concentrations than permitted levels. Silver was 140 times more enriched in tailings than in natural river sediments, arsenic 52 times more enriched and lead 45 times more enriched. The MPI states that there are no legal constraints on the quantity of mercury that Porgera discharges into the Strickland River, despite wide recognition that this is one of the most hazardous heavy metals. As a result of the discharge, the mercury levels immediately below the minesite are so high that they would only normally be found below a mercury mine (MPI, 1995).
The mine and the PNG Government have agreed not to put limits on the levels of mercury contamination. Mercury levels measured at Lake Murray, a distance of some 500 kms from the point of discharge, have become a stated concern of the Porgera Environmental Advisory Komiti (PEAK) (PEAK 1999 Annual Report). PEAK is comprised of representatives from the PNG Government, non-government organisations (“NGOs”) from PNG and abroad, Placer PNG, and “independent technical experts” (placerdome.com, 2003). Moreover, the PNG Government has permitted the first 140 kilometres of river below the mine to become a zone with no limits on the levels of hazardous and potentially lethal heavy metals that may occur, i.e. the first 140 kilometres of the Porgera River has no legal limit on water quality (IIED, 2002).

The effluent of the mine drains into the Maiapam River, a tributary of the Porgera River, which is itself a tributary of the Lagaip, which flows into the Strickland River and then into the Fly. The Lagaip River carries a high natural sediment load from erosion and land-slips due to the heavy rainfall in the area. Before the confluence with the Fly, the Strickland flows south for several hundred kilometres, passing to the east of Lake Murray (Figures 4.2 and 4.3). It then flows in to the Fly River, which continues into the Gulf of Papua. The Strickland is a fast-flowing river, which breaches its banks at times of flood and flows into the wetlands and rivers in between its own path and Lake Murray. The down-river communities affected by the operations of the Porgera mine total approximately 7,000 inhabitants (MPI 1995) and the
inter-connectivity of the water courses further exacerbates the riverine pollution which affects these inhabitants - further to which the Ok Tedi mine effluent is dumped into the Ok Tedi river which is also a tributary of the Fly river.

Apart from the gold, the principal target of the Porgera mining operation; the ore mineralisation shows concentrations of lead, zinc, iron, and sulphur as well as traces of mercury, cadmium, arsenic and copper. The manner in which the ore is treated produces an effluent consisting of flotation tailings, acids and cyanidation tailing, heavy metal sulphides and hydroxides, and very large quantities of sediment. The amount of the discharge into the river system totals approximately 14 million cubic metres annually of the combination of effluents and the levels of 'trace metals' such as silver, arsenic, and lead were found in a study by the CSIRO in May, 2001 to be 140 times, 52 times, and 45 times respectively more enriched than in natural river sediments (CSIRO, 2001, p.13). Given that the PNG Government has sanctioned the 140 kilometre so-called 'sacrifice zone' downstream of the mine, it is permissible to discharge hazardous and potentially deadly heavy metals into the river system without being accountable for measurement or impact of these effluents.

There is no limit on the levels of mercury which may be discharged to the river system, or found in the river system, as the Porgera Joint Venture (PJV) operating licence has not set any limit to the level of mercury permitted in the
river system. The Placer Dome Inc. website states, inter alia, that the mine has at all times been in compliance with government approved waste disposal criteria.

Following numerous complaints from local inhabitants and the publication in 1995 of *The Porgera Report* by MPI, a Commonwealth Scientific & Industrial Research Organisation of Australia (“CSIRO”) study was undertaken to assess the Porgera mine’s impact on the downstream river system and local people. The study (CSIRO, 1996) concluded that the impact of Placer’s waste disposal on the river was significant and that its riverine impact management and monitoring were inadequate.

Nevertheless, Placer Dome states that the study found that the mine had no effect on the health of the local villagers but made certain recommendations, as a result of which Placer Dome established PEAK in 1996. Placer stated that the primary function of PEAK is to enhance understanding and provide transparency of Porgera’s environmental (physical and social) issues with external stakeholders and to assist in reviewing its environmental performance and public accountability (placerdome.com, 2003).

Notwithstanding these clearly stated objectives, the then Chairman of PEAK, Yati Bun, resigned in June 2001 accusing Placer Dome of using him in propaganda materials while doing nothing to mitigate the impacts of riverine disposal (Mining Watch Canada, Press Release, June 14, 2001). Following
his resignation Placer Dome was dropped from the Dow Jones Sustainability Index. Chairman Bun's resignation came immediately following the second CSIRO report prepared in May, 2001 which found, contrary to Placer Dome's assertions, that significant riverine contamination was taking place in the lower reaches of the Strickland River as stated above.

The levels of pollution within the river system described above have been found by the MPI to be up to 3000 times greater than PNG’s water quality limits; the levels of lead pollution were more than 2300 times the Australian limits for lead (at Maiapam River one kilometre below the discharge point). At Wanikipe, 80 kilometres downstream of the discharge point, 32 times the Australian limits for lead were found; 10 times the limits for zinc and nine times the limits for mercury. It claims that the levels of arsenic and lead levels are more than nine and three times greater than the PJV’s documented pre-mine arsenic and lead levels at SG3 (the downstream administratively established point on the river for such measurement) that the measurements for lead, arsenic and mercury at Nomad on the Lower Strickland River were three, four and four times the pre-mine level, respectively (MPI, 1995) Not having had set any compliance criteria for mercury such levels were found to be 15 times the Australian limits and more than 15 times the recorded natural level at SG3.

In June 1991 the Water Resources Board of PNG granted the PJV the permit pursuant to Section 40 of the Water Resources Act 1982 to dispose of tailings
into the Maiapam River, a tributary of the Porgera, Lagaip and Strickland Rivers. The Board specified that the discharge will occur at a rate of 39,830 cubic metres per day, 30 days per month, 12 months of the year. This amounts to an annual discharge volume of 14,338,800 cubic metres. The permit states that on the basis of a treatment factor of K0.25 per tonne and a basic charge of K0.01 per tonne an annual charge of K35,847 is payable each year (PNG Government, 1991), thus the volume discharged is directly proportional to the revenue raised (ibid.). That the PNG Government should require a royalty of such meagre proportions per tonne of waste dumped, indicating a willingness for cash as a further trade-off for environmental damage, while granting a licence for riverine disposal does not augur well for a conscientious approach to the question of pollution monitoring and policing.

As with mining operations in other regions of PNG, the degradation which is occurring also encompasses a high degree of social disintegration on a regional and tribal level. In the lead-up to, and continuing on from, the opening of the Porgera mine and the implementation of mining operations, there resulted a large-scale influx to the Porgera region from other regions of people with an extended and distant claim to ownership of the Porgera land. This occurred in anticipation of the benefits - particularly of a financial nature - which were expected to flow as a result of the mine operation. In the event, over and above the wages paid for working in the mine, there was also a substantial level of compensation paid to the local inhabitants for loss of land, crops, and surrounding bush damage and for costs of relocation of families.
and tribes. The level of cash compensation was such that there ensued a rapid social disintegration process which introduced new inter-tribal and family tensions and socially destructive behaviour such as alcoholism and drug abuse became rife in the community (Glenn Banks in Howitt et al., 1996).

4.2 BHP’s Ok Tedi Gold and Copper Mine

The Star Mountains and Hindenburg Range, at an elevation in excess of 3,000 metres, form part of the central spine of the island of New Guinea. This central range, in the Western or Fly River Province, forms a major divide which separates the drainage of the Sepik River to the north and the Fly River system to the south. The Fly River and its tributaries, the Strickland and the Ok Tedi, form a catchment area of approximately 100,000 square kilometres with the Fly extending some 1,100 kilometres. The Fly River is the second largest river in PNG and has rainfall of up to 14 metres per annum and a discharge of approximately 200,000 million tons of water (c. 240 trillion litres) annually (rettet-die-elbe.de/oktedi: UNESCAP). Along with such river systems as that of the Mississippi and the Amazon, the Fly River ranks as one of the largest in the world (Thompson, 1990).
In the upper reaches of this river system, there is an area where the predominant environment is tropical to open forest and swamp forest, in the midst of which flows the Ok Tedi river (see Figure 4.2) and in which is situated the Ok Tedi mine. The Ok Tedi river joins the Fly river near Kiunga. From the elevation at the Ok Tedi mine of approximately 2,100 metres, it drops 1,524 m. to the town of Tabubil - a mere 16 kilometres away by air - and is only 34 metres above sea level at the confluence with the Fly river near Kiunga.

While the mine produces both copper and gold, its viability was largely predicated on the gold content of the ore body (Pintz, 1982). The deposit was discovered in 1969 by Kennecott Pacific Pty. Ltd. (a subsidiary of the
Kennecott Copper Corporation of the U.S.A.) following their application for a prospecting authority the previous year (ibid.). After a period of about 7 years exploring and assessing the potential of the mine, Kennecott abandoned the project and a consortium led by the Australian company, Broken Hill Proprietary Limited (BHP), took over. To develop the site, the town of Tabubil was built and the consortium was formalised as Ok Tedi Mining Limited (OTML) comprising of BHP (52 per cent), the PNG Government (30 per cent), and Inmet Mining Corporation (18 per cent). Construction of the mine commenced in 1981 on Mt. Fubilan and a 20 kilometre access road was built from Tabubil to the mine site and another from Tabubil to Kiunga (the port on the Fly River 800 kilometres upstream from the Gulf of Papua) to which is piped the slurry of ore concentrate, the product of the mine.

The Ok Tedi mine, which is one of the largest open-cut mines in the world, started operations in 1984 and was lauded as a prospective major benefactor in the regional development of the area. Pintz (1982, p.11,12) then saw it as "the only opportunity for large-scale industrial development in one of Papua New Guinea's least developed areas" and, significantly, he stated, inter alia, that "the Ok Tedi experience suggests that well-reasoned policies of .... environmental concern can be integrated into new project design without imposing arbitrary standards or prohibitive costs."
Figure 4.3  Map of the Fly River system. Source: Mining, Minerals and Sustainable Development, April 2002 No. 68a, Mining for the Future, Appendix H: Ok Tedi Riverine Disposal Case Study.
It is now the single largest business contributor to the economy of both the Western Province and PNG (OTML). In 2000, OTML's export sales were K1,025.6 million which represented 18 per cent of PNG's foreign exchange earnings. In the 2001 year, its export sales reached K1,148.2 million again representing 18% of PNG's total exports (Ok Tedi Mining Limited). However, another product of that activity is the fact that approximately 80,000 tonnes of waste rock and tailings are dumped into the Ok Tedi River every day and, in the period from 1984 to 1998, the annual average waste rock and tailings discharge into the fly River system was 65 million tonnes of which waste rock constituted 44 million tonnes and tailings 21 million tonnes (World Bank, Jan. 2000).

It should be borne in mind, in the context - as discussed earlier - of environmental control in Papua New Guinea, that the concept of environmental management and protection was enshrined in PNG's Constitution and the fact of the passage of the Environmental Planning Act (EPA) and the Environmental Contaminants Act (ECA) by the PNG parliament in 1978. Despite this, in the establishment of the Ok Tedi mine, the Government specifically exempted it from the conditions of both the EPA and the ECA.

At the outset of the mine's operation, the environmental monitoring conditions and the conditions regarding the regulation of contaminant substances were severely limited by the fact that the intending Ok Tedi mine consortium was
required to expend no more than K150,000 in total (approximately US$50,000 at October 2006 exchange rates) on environmental investigations rendering them "totally inadequate" (UNESCAP, 1996). Following the 1980 supplemental agreement (there were to be eight further supplemental agreements) to the initial 1976 Ok Tedi Mine agreement, OTML undertook a more extensive environmental impact study which recommended a programme of future monitoring.

The mining process involved, inter alia, significant quantities of cyanide residue which OTML argued would be completely oxidised, i.e. rendered harmless, by being passed over a 50 metre weir prior to impoundment in a tailings dam. The tailings, constituting approximately 97% of the processed ore, were to be retained in a tailings dam to be maintained in perpetuity by the Company (clause 9.1 of the 1980 supplemental agreement). Nevertheless, the Company initially strongly argued that the tailings should be dumped directly into the Ok Tedi river and that, because of the very high rainfall, any toxic materials would be diluted downstream.

The Government, however, having witnessed the environmental damage done as a result of uncontrolled dumping at Panguna on Bougainville, was concerned at the prospect of similar uncontrolled dumping in the Ok Tedi (Thompson & MacWilliam, 1992). The original 1976 agreement, therefore, envisaged that the tailings dam, to be built on the nearby Ok Ma river, would mitigate the environmental damage by allowing for the precipitation of the
waste within the dam and the passage of relatively clean water to continue into the river system. Construction of a tailings dam began in 1983 and OTML claimed that expenditure on the dam totalled $70 million (OTML).

In the event, however, the initial tailings dam and waste dump were destroyed by rainstorms and mudslides in December 1983 and January 1984. The Government, faced with the prospect of the closure of the mine by BHP if it insisted on the reconstruction of a tailings containment facility, submitted to the demands of the mine operators and gave approval to continue to dump directly into the river system (John Gordon in Banks & Ballard, 1997).

That decision, although beneficial from the point of view of government revenues, resulted in devastating effects being visited on the environment and the inhabitants of the Ok Tedi and Fly river systems catchment area. Thompson (1990) states that the fact of the Government relaxation of standards in regard to the disposal of waste from the Ok Tedi mine has led to siltation and pollution of the Fly River system and may extensively affect the marine environment as far south as the Great Barrier Reef.
Moreover, in June 1984, a barge transporting OTML chemicals overturned in the Fly River estuary with the loss of 2,700 60 litre drums of cyanide. It constituted at the time the single largest loss ever of one of the world's most dangerous poisons. A further disaster occurred within a week when a by-pass valve was left open with the result that more than 1,000 cubic metres of highly concentrated cyanide waste was released into the Ok Tedi river [Hyndman, D, (1991), Zipping Down the Fly on the Ok Tedi Project: 79, taken from Chapman, 2000, b].

Amidst continued and growing international criticism of the mining methods employed and the environmental devastation being caused by the waste product being dumped by the mine, OTML produced a report in August 1999

Figure 4.4  Dieback of vegetation in the Ok Tedi River Catchment, 1996. Source: Mining, Minerals and Sustainable Development, April 2002 No. 68a, Mining for the Future, Appendix H: Ok Tedi Riverine Disposal Case Study. Photo credits: S. Kirsch.
entitled Mine Waste Management Project - Risk Assessment (MWMP) as a result of which a decision was made that BHP (later BHP Billiton) determined to close the mine down in order to avoid a continuation of the damaging publicity and further litigation - the intensity of which was then increasing. Haraka Gaudi, of the PNG Institute of Public Administration, in a June 1999 response to a query on levels of government controls in regard to, inter alia, waste emissions refers to the decision to wind up the Ok Tedi operations within fifteen years as an admission of the magnitude of the irreversible damage done to the OK Tedi River System. He stated that what had been denied and viewed as a non issue to be swept under the carpet became a major environmental issue. This announcement came about as a result of an independent study conducted by a group of international scientists who confirmed and verified that the problem of environmental degradation was much worse than admitted by OK Tedi Mining Ltd. Vegetation die-back of the river system down stream (Figure 4.4) had expanded to include the forested areas and OTML had finally admitted openly that it could not adequately address environmental issues, opting therefore for early closure of the giant copper mine (Gaudi, 1999).

However, the cash-strapped then government of Prime Minister Mekere Morauta, heavily dependent on the profit participation, royalties and taxes of approximately $30 million per annum which it received from the mine, opposed the closure to the point where it agreed to, and did, introduce legislation which indemnified BHP against all future compensation claims.
The Government did, however, prior to that decision, request the World Bank to provide it with counsel regarding the report (MWMP) prepared by BHP. The World Bank responded that, while the report provided as good as could reasonably be expected advice regarding the scientific, engineering, and financial options; that the social aspects of the situation and of the recommended closure of the mine needed more investigation to bring that to the level of the environmental aspects of the report.

In September 2001, BHP Billiton announced its intention to divest itself of its shareholding in the Ok Tedi mine in January 2002 and a further piece of legislation, the Ok Tedi Mine Continuation (Ninth Supplementary) Act, was presented to and passed by the PNG Parliament. The mine ownership structure then changed with the transfer of BHP's 52% equity to a new company representing the people of PNG called the PNG Sustainable Development Program Ltd. The new company's share dividends are be distributed to the people of Papua New Guinea, generally in the form of sustainable development projects. The equity transfer became effective in February 2002 (PNG-online).

Despite the rancour and furore generated by the environmental damage wrought by the Ok Tedi mining activities, the mine is expected to continue operations in its new guise until 2012 (The Australian, 7 Dec. 2004). The net cash flow to the company in the eighteen months to December 31, 2003 was $217 million and the mine was reported in 2004 to be contributing 15 per cent
of PNG's GDP and 25% of its export earnings (The Australian Financial Review 2 February 2005).

In his 2002 thesis, Matthew Chapman discussed the activist and legal challenges to BHP and its Ok Tedi operations and discussed the Company's new focus on early closure of the mine and retirement from PNG mining activities. This action angered Ok Tedi and Fly River landowners who were of the opinion that BHP should remain at Ok Tedi in order to rehabilitate the river and the eco-systems damaged by the pollution caused by the mining activities.

One of the principal reasons behind BHP's desire to exit its Ok Tedi operations was its hope of avoiding further liability for the environmental damage caused. Chapman discussed the possibility of BHP handing over their interest in the mine to the Government in return for absolution from responsibility for the environmental liabilities of the Ok Tedi mine - and that, despite the vehement objections of the then minister for mining, Michael Somare, and the Prime Minister, Sir Mekere Morauta

Chapman correctly predicted that the mine would continue operations until it was no longer economically feasible despite having, at that time (2002), dumped over a billion tonnes of mine waste at a continuing rate of 100 000 tonnes of waste per day into the Ok Tedi and Fly River Systems (Chapman, 2002, b).
Despite this ongoing waste dumping, as soon as BHP had disposed of its interest in the mine and mining operations had been assumed by local interests, "the NGO and legal pressure on the mine evaporated" (Callick, 2005).

### 4.3 Lihir Gold Limited's Gold Mine

Lihir Island, which is 15 km long by 10 km wide, is in the New Ireland province of Papua New Guinea about 700 km north east of Port Moresby. The island has several significant volcanic features, principal among which is the extinct Luise Caldera which hosts the giant Ladolam gold deposit consisting of an estimated 43 million ounces of gold. The Lihir gold mine is located on Lihir Island and expects to access part of that extensive deposit.

The Lihir gold project is estimated to produce a total of 13 million ounces over its expected 30 year life (Papua New Guinea Online - Profile). Owned by Lihir Gold Limited, it is managed by Lihir Management Company Limited (LMC) which is a wholly-owned subsidiary of Rio Tinto. Rio Tinto (which had previously been forced to close down the Bougainville copper mine in 1989), as well as having management control of the Lihir mine, also owned a 16.3% stake in Lihir Gold as at February 2003. As with the Porgera mine noted above, the PNG Government vehicle, Orogen Minerals Limited, also holds an interest – as does another Porgera participant, Placer Dome. The Special Mining lease granted by the PNG Government in March 1995 is valid
for the term of the company’s Mining Development Contract which is expected to be for a period of 40 years.

Consisting of one of the world's largest gold resources, the mine produces over 600,000 ounces of gold each year (Lihir Gold Ltd., 2003). Its reserves have recently been lifted to 16.7 million ounces which would give the mine an active life, at present rate of production, of almost 70 years (Business Review Weekly, Feb. 6-12, 2003, p.32). In 2000, Lihir treated 3.4 million tonnes of ore at an average grade of 6.01 grams of gold per tonne, producing 606,310 ounces of gold at a cost of A$220/oz. Following improvements in 1998 to processing techniques, the plant capacity had been increased from 2.9 million tonnes per annum to 3.6 million tonnes per annum (Lihir Gold Ltd.).

The final planned dimensions of the pit are estimated by Lihir Gold Limited to be approximately 2 kilometres by 1.4 kilometres and is expected to have a final depth of 185 metres below sea level, and the mine production involves the stripping of between 36 and 42 million tonnes per annum of overburden.

Most of the ore contains refractory sulphides requiring oxidation before cyanide leaching and hydrothermal activity. The high water table creates a major water problem. The slurry is thickened prior to cyanide detoxification before it is discharged through a submerged tailings line. Prior to the recent upgrading of its reserves, it was estimated by MPI that, at the then level of reserves, the mine was expected, by means of its ‘submarine’ tailings disposal,
to dump 89 million tonnes of cyanide-contaminated tailings and 330 million tonnes of waste rock into the ocean (refer Figure 4.5).

The Company, in its ‘2002 Report to the Community’ (p.17), claims that it “continues to maintain an excellent environmental record” and states that there is a full-time environmental officer from the PNG Department of Environment and Conservation based on Lihir whose “specific purpose” it is to ensure that the Company’s environmental obligations are met. It further makes the claim that it is in compliance with all relevant PNG laws and regulations, international treaties, including the London Convention.

However, at the 24th Meeting of the London Convention\(^4\) held in November 2002, Greenpeace International, in its submission on the Lihir gold mine and as a result of testing at its laboratories at the University of Exeter, alleged that the waste rock from the mine being dumped at sea contained elevated levels of toxic material such as copper, mercury, and metalloid arsenic. In as much as the waste represented waste from industry, it claimed that the material was, in fact, industrial waste (Greenpeace International submission to the 24th Meeting of the London Convention).

Under Articles I and IV of the London Convention (1972), (the purpose of which is to prevent pollution of the sea by the dumping of waste or matter

liable to be hazardous to human health or that of marine flora or fauna) to which Papua New Guinea is a signatory, the dumping of such waste is prohibited.

Moreover, and as a matter divorced from the question of waste containing toxic material; the London Convention also proscribes dumping of industrial waste at sea and the dumping of inert, inorganic geological material which is described by the Convention as waste resulting from mining activities because of damage resulting from the smothering of marine organisms.

The Waigani Convention of 18 September, 1995, of which PNG and Australia are parties, also confirms the commitment to prevention of marine pollution by the dumping of hazardous wastes.

Nevertheless, the Lihir project dumps and is expected to continue to dump 330 million tonnes of solid waste in the Luise Harbour by barge and 89 million tonnes of tailings contaminated by cyanide by means of submarine tailings disposal (Chatterton, 1996). Submarine tailings disposal (STD) is a process whereby tailings are dumped at sea by means of a pipe from source, in the case of Lihir 125 metres under the sea. Both types of waste, however, contain heavy metals including copper, mercury, cadmium, lead and chromium – all of which are toxic (Divecha, 2002).
Figure 4.5 Satellite view of mine waste at Lihir, revealing a plume of turbid water in Luise Harbour, caused by the mine. (Source: http://www.mpi.org.au/std/images/overview_med.jpg)
As a result of such dumping, at a rate of between 1,400 and 4,600 tons of rock per hour (Berne Declaration report, 1999), there exists a visible ‘sediment plume’ in the Luise Harbour and extending out to sea for a distance of approximately 3 kilometres (Greenpeace report, 2002). Lihir Gold Ltd. itself acknowledged, in its initial public offering document in October, 1997, that the construction and operation of the mine would result in sedimentation effects to the coral reefs along the island's east coast, and would reduce the proliferation and number of coral species and fish. The US Overseas Private Investment Corporation (OPIC), which is prohibited under United States legislation from providing support to any project considered, inter alia, to pose a major or unreasonable environmental hazard, refused to finance the mine because this offshore dumping violates international agreements such as the London Dumping Convention and the South Pacific Convention. (Berne Declaration report, 1999).

The population of Lihir Island is approximately 7,585 (lihir.com.pg/community/comdev3.htm). The inhabitants have traditionally been involved in subsistence agriculture. However, in 1995, after years of negotiations, the then mining consortium and the Lihir Landowner's Association concluded an agreement referred to as the "integrated benefits package." One of the conditions of this agreement was that landowners would sign a contract undertaking not to bring future claims against the mining company (Berne Declaration report, 1999). This did not deter angry landowners from the nearby village of Putpu from temporarily shutting down
the project's operations in July, 1988 due to concern about gas emissions and the general environmental impacts of the mine.

4.4 Conclusion

The first PNG open-pit mine commenced copper production at Panguna on the island of Bougainville in 1972 operated by Bougainville Copper Limited, a mining subsidiary of Rio Tinto (CRA). The PNG Government was also part owner to the extent of 19%. Environmental degradation on the island was identified as a principal reason for an armed rebellion by the people of Bougainville which resulted in the closure of the mine (Thompson, 1990). From that point on, PNG was destined to experience a dramatic level of environmental, societal, human, and economic devastation which still exists – albeit that that mine has been closed for over fifteen years.

The mine was to become the biggest open-pit mine in the world. As a result of its operation there was precipitated environmental damage on an unprecedented scale. This contributed to a full-scale armed rebellion which continued for over ten years, and a class-action suit filed in 2000 in the United States District Court in San Francisco against Rio Tinto PLC and Rio Tinto Limited by the villagers of Bougainville affected by the mine.

Using a United States Federal law that allows such civil actions, the residents of Bougainville Island alleged that the Company operated the Bougainville copper mine which resulted in international environmental violations and
crimes against humanity stemming from a military blockade motivated by civilian resistance to the mine. Significantly, the claimants allege that the Company did so in collaboration with the PNG government.

The suit also alleges that the local inhabitants continue to be exposed to toxins resulting from the Panguna mine and that they have suffered loss of property due to ongoing environmental contamination. The history of the situation dates back to the time of the Australian administration of the territory when, for a period of four years leading up to 1972, land was leased on the island of Bougainville to Bougainville Copper Limited and many Bougainvilleans were forced to relocate or leave the island.

The claim further alleges that, at Panguna, the Company relocated three principal villages; razed other entire villages; destroyed the rain forest; removed a mountaintop in Crown Prince mountain range; excavated 300,000 tons of ore and water every day during its operation between 1972 and 1988; laid the basis for environmental disaster by improperly dumping waste rock and tailings; emitted high levels of chemical and air pollutants; and turned the fertile Jaba and Kawerong river valleys into a wasteland.

In the context of the Ok Tedi mine, the evidence of the dramatic devastation which was occurring continued to attract progressively more attention and denunciation and, in May 1995, an action was initiated by the Melbourne firm of lawyers, Slater & Gordon, on behalf of 30,000 inhabitants of the Ok Tedi
and Fly river basins. They lodged a writ against Broken Hill Proprietary Limited (BHP) demanding compensation for the environmental damage done by the discharge of up to 100,000 tonnes per day of untreated tailings from the Ok Tedi mine. The quantum of compensation demanded was A$2 billion for damage caused by millions of tonnes of copper tailings which was claimed to have rendered the river ecologically dead and laid waste thousands of hectares of forests and flood-plains (http://multinationalmonitor.org/hyper/mm1295.04.html).

While the hearings in Melbourne were in progress; primarily as a result of the action and with the intention of providing estoppel⁵ and in an attempt to obviate any further such actions, in 1995 the PNG Government drew up a bill entitled the Restated Eight Supplemental Agreement. The bill, inter alia, allowed for compensation to be paid on an annual basis to the litigants by OTML but the legislation also sought to ensure that claims by its citizens for compensation against companies operating in Papua New Guinea be heard in the Papua New Guinea court system.

The Agreement further incorporated an unprecedented combination of provisions which, at once, purported to obviate the right of any future would-be litigants from initiating any further legal action against the Company (OTML), deny the natural course of justice by eliminating the right of

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⁵ The legal doctrine of precluding contrary assertions by pertinent judicial determination.
individuals to give evidence in such matters, and undermine the validity of the country's constitution by the rejection of those very freedoms which the Constitution specifically provides. In 1996, it introduced further legislation in the form of the Compensation (Foreign Legal Proceedings) Act, 1995, which restricted access by the people of Papua New Guinea to courts overseas (UNESCAP, 1996, c).

These attempts must be viewed in the context of the fact that there is enshrined within the Constitution of Papua New Guinea the concept of, not only the responsible management of the country’s resources, but also the requirement for protection of the environment. Following on independence in 1975, the passage of the EPA and the ECA in 1978 further reinforced the sanctity and requirement for protection of all aspects of the environment. The fact of the passage of those Acts establishes the existence of an awareness at that time of the necessity to protect the environment and yet, in the face of that awareness and in the establishment of the Ok Tedi mine, that mine's operations were specifically exempted from the conditions of both the EPA and the ECA. This act defeated the very purpose of environmental control which was aimed at minimising the undue depreciation of the environmental asset. The constitutionality of such acts on the part of the Government must, at best, be regarded as questionable.

As an extension, the PNG Government determined to end further criticism of the Ok Tedi mine and evidenced hostility to continuing investigation of the
extent of the environmental devastation being wrought by the mine. Similar to that which had earlier occurred in relation to the Bougainville copper mine, in 1992 an action was initiated against OTML by a local environmental group, the Wau Ecology Institute, at the (then) European Commission-funded International Water Tribunal in Amsterdam. The investigating scientists commissioned by the Tribunal were refused visas by the PNG Government (Chapman, 2000, b).

The exemption of the Ok Tedi mine operations, in and of itself, facilitated so much devastation to the environment in and around the Fly River system that it caused a quantum leap in the world awareness of the damage being effected on the environment in PNG. It laid open to extreme criticism successive governments which have tolerated or sanctioned the mining and natural resource exploitation activities which are responsible for this devastation.

The actions of the PNG Government in endeavouring to dampen any further criticism of the mining activities and its efforts to obstruct any investigation and litigation – either domestic or of foreign initiation – further exacerbated an already highly charged situation and made a resolution of the problems more difficult.

The opprobrium in which the mining activities are now held is greater than ever, yet the structural priorities for the PNG economy are such as to render the question of environmental degradation as incapable of appropriate
remedial action without further and substantial international aid both of financial and administrative nature. The growing awareness of the problem while continuing to focus international attention, does not alleviate the problem.

This research is not primarily focussed on the environmental degradation *per se* but rather the reasons as to why the PNG Government would have made the decisions which precipitated the damage. Nevertheless, it is necessary that a scope of degradation be established in order to provide context to the analysis. This chapter has briefly illustrated the extent of the damage caused.

The possible reasons for the continuing propensity of the PNG government to not only permit continuing environmental degradation but to openly encourage those activities which precipitate such degradation will be examined in the next chapter.
Chapter 5  Government Policy Failure and Corruption

5.1  Government Policy Failure

The symptoms of the inherent and endemic weakness of the PNG state coincidentally contribute to the causal tendencies toward incompetent and disfunctional administrative conduct and precipitate a vicious cycle of crime and corruption. They include frequent political changes in both leadership and government and continuing corruption on a national scale. This precipitates public frustration which is, in turn, frequently manifested in criminality and a continuing and growing disdain for the rule of law. This disdain is evidenced by further violence and crime which is often countered by overreaction on the part of state agencies which are overwhelmed by their inability to control the situation. Such overreaction merely serves to reinforce community opposition and introspection which continues the cycle. The populations of entire villages which have been burned down and whose livestock has been destroyed are not uncommonly and not surprisingly left frightened and destitute (Pitts, 2002).

In effect, the concept of nationality and national spaces is one which has been largely imposed on the PNG indigenous peoples by the subsequent dominance of immigrant populations and the formation of states by colonial influences and external powers. In such formations, there is abundant evidence of arbitrary imposition of borders destined to become the defining boundaries of a new nation-state without proper - or any - consideration of the displacement effects on the local indigenous populations.
Problematic examples of these colonial impositions of national boundaries include instances such as the absorption of West Papua within the Indonesian nation state which was later to precipitate ongoing difficulties both internally and internationally; the amalgamation of the hundreds of disparate tribes, islands, and allegiances to form Papua New Guinea; and the imposition of the border between Laos, Thailand, and Vietnam where whole tribes continue to be forcibly relocated or extradited. Bougainville has become a prominent example of a territory enveloped in the colonial imposition of nation-statehood which was later to collapse into protracted civil war as a direct result of the implications of that imposition. The ensuing prospective resolution of that situation is now to be the effective secession of the territory from the nation-state of which it was an established part.

The external imposition of enforced unity on what is clearly a conglomeration of disparate tribal and regional affiliations is exemplified in the political and regional construct of the state of Papua New Guinea itself. The fact of these imposed boundaries contributes to the complications and dilemmas which the PNG Government faces in the context of each natural resource licence or franchise which it grants and also contributes to the degradation of the natural resources and the neglect of any remedial action on the part of the government in that context.
In most instances of natural resource degradation the responsibility can be traced directly to policy failure on the part of government and resulting from inept and incompetent decision-making (Ascher, 1999). In the case of Papua New Guinea, there appears to be justification for believing that the damage done to the environment over an extended period and continuing in the face of damning evidence of that damage is indeed primarily a result of incompetence and incapacity on the part of the officials responsible for the administration of that function (ibid.). The position is further considerably aggravated by the chaotic nature of parliamentary elections in PNG and corruption involving bribery and nepotism as was shown in Sections 2.3 and 3.4.

Successive PNG governments permitted continuing devastation of the natural environment during the period of the operation of the Panguna mine on the island of Bougainville. This environmental devastation not only created widespread hardship for the inhabitants of Bougainville but also contributed to the civil war which raged for almost 15 years. As a result, statutory measures were put in place in order to ensure that such environmental damage did not recur.

However, as I have pointed out in Chapter 4, the response of the PNG Government to the extraordinary environmental degradation resulting from the collapse of the tailings dam at the Ok Tedi mine site December 1983/January 1984 was not an insistence that a new tailings dam be constructed and that the damage already caused should be remedied. On the
contrary, the response of the government was that the statutory requirement for a tailings dam of any description be removed - a decision which gave the company effective sanction to continue dumping approximately 80,000 tonnes of waste rock and tailings directly into the river system on a daily basis from that time onwards.

In PNG the institutions inherent in a political system of validation, maintenance, and restoration of order within a uniform framework of social relationships common in Western society are lacking. PNG has no tradition of a hierarchy of specifically vested authorities for purposes of legislative, administrative, and judicial functions. As discussed in Section 2.2, even now the primary focus of PNG society remains the clan and, to that extent, can be viewed as stateless and cannot be described as a single body politic, united and unique (also Berndt & Lawrence, 1971).

Moreover, as has been shown in the case of PNG, the political context is such as to represent a breeding ground for corruption and cynical opportunism. The large number of candidates - sometimes as many as 30 times the available number of parliamentary seats - who regularly stand in general elections has the effect of damagingly splitting the vote along tribal lines. As a result corruption throughout the process of election has become endemic using the controversial Rural Development Funds or what are commonly referred to as slush funds (Pitts, 2002).
In an environment where it is commonplace for candidates to be elected to parliament only once (Lipscomb et al., 1998) it is not surprising that individual members of parliament are often disposed toward promoting their personal interests during their tenure - frequently to the detriment of the national and community interest. The national political scene has proven to be extremely unstable and party discipline is such that party members frequently vote as independents or "to augment their bank balances" (PNG Post-Courier, p.2, 18 June 2004).

The opportunities which were initially presented to the PNG Government to generate revenue flows from resource exploitation were to be constrained by a degree of care and protection for the environment which still existed in the initial stages of the country’s newly established independence. These constraints were predicated on the adoption of the country's constitution and the environmentally-protective measures and aspirations enshrined therein. There was also, during the discussions concerning the assumption of control of the Ok Tedi development by BHP, a growing concern for the environment as a result of studies which had been undertaken in the lead-up to their involvement. These studies were undertaken by government specifically because of the misgivings generated by previous experience - particularly in the Bougainville Panguna mine (Chapman, 2000, b).

Moreover, there was a certain sensitivity among PNG politicians as a result of the environmental damage which had been experienced as a consequence of
the operation of the Panguna mine. Conzinc Riotinto of Australia Limited - or CRA, as the company was known - had been granted a prospecting licence in relation to the Crown Prince Mountain Ranges on Bougainville Island and had determined that there existed 500 million tonnes of low grade copper ore with a significant gold content (ibid.).

Following the initiation of production at the Panguna mine site in 1972 it rapidly became the largest mine in the Southern Hemisphere with direct and indirect employment for in excess of 4,000 people. But by the time discussions were taking place between the PNG government and BHP regarding the proposed Ok Tedi mining operations, the evidence of the environmental disaster on Bougainville as a result of the improper dumping of waste rock and tailings and the emission of chemical and air pollutants was beginning to be clearly evident. The political fall-out from such devastation had significantly contributed to the passage in 1978 in the PNG Parliament of the Environmental Planning Act as one of the reactive statutory measures effected – effected, that is to say, as legislation but largely ignored in its administration and policing.

Because of these concerns and the lack of adequate completed fieldwork which would have been necessary to produce a satisfactory environmental study for the Ok Tedi proposal, the Government undertook its own environmental investigations in 1979 (conducted by specialists from the Australian National University) which raised serious concerns regarding the
effects of mine waste on the river system and its inhabitants. The study used the known effects of the Bougainville activities as a basis for modelling the likely impact of the intended mining operation at Ok Tedi. The results of these "government-sponsored studies raised substantial questions about the effects of mine waste dumping in the Ok Tedi River on down-stream residents and subsistence life-styles." (Pintz, 1984 p.80). In fact, as has been shown, the concerns raised by the studies were not only borne out following the initiation of the Ok Tedi operation; the actual environmental damage was, and was acknowledged to be, considerably greater than anticipated.

As a consequence of these findings, the PNG Cabinet directed that high priority be accorded to the matter of mine-induced sediment control. Despite the prior awareness of these potential concerns and its self-produced empirical data, the Government was eager to proceed with the mining activities and it proceeded to sanction, not only the early stage operations after the construction of the tailings dam at Ok Tedi, but also all the later mining undertakings and their attendant and evident environmental devastation.

As the development of these projects proceeded and they began to generate the expected revenues and as reliance on these revenues grew, the temptation to alleviate or dispense with the environmental protective conditions on such exploitation became overwhelming. Pintz, writing in 1984 (as the Ok Tedi mine was under development), discussed the question of power struggles between central and provincial government bureaucracies as a direct result of
resource development opportunities but was optimistic that control of field activities would be returned to central government and, thereby, provide a better basis for further natural resource project development for the future. He was of the opinion that the question of environmental concern could be assimilated into well-reasoned policies in new project design without the imposition of improperly addressed environmental protective measures or costs.

His optimism, however, was misplaced. This was evidenced later when a large number of the requirements originally stipulated by the government for environmental protection were summarily dispensed with when it was faced with the possibility of the loss of those revenues provided by the Ok Tedi mine. It would appear to bear out Ascher's (1999) contention that improper resource exploitation is not only caused by government policy deficiencies, but that those very failures induce or even force such conduct. In the case of Ok Tedi, the revenue created for the government by the mine was sufficient to precipitate a certain tolerance or a purposeful ignoring of the occurrences of grave environmental degradation.

Why the PNG Government should have moved from an initial position of grave concern regarding the potential damage to the environment as a result of mining activities and the initiation of environmentally-protective policies to one which dispenses with any response other than lip service appears to be heavily interconnected with the question of revenue generation. However, it
should be noted, in endeavouring to determine the reasons for such an apparent growth in disinterest in the health of the environment in favour of immediate return (either in terms of generation of revenue to the government or advancement or benefits to individual government officials), that the focus is on the failure of government policy.

In the case of the mining industry in PNG, it is also to be noted that, with or without government departmental autonomy and lack of transparency, the continuing failure to address the growing level of degradation appears to be evidence, on the part of the PNG Government and government officials, of a lack of interest in remedying the degradation caused by the industry or an inability to implement a remedial process. This situation is aggravated – and its appearance becomes more pointed in the circumstances - where there is a legislative requirement on the part of the natural resource developer to forfeit a percentage of the gold mined as well as, and coincidentally with, the payment of taxation on the balance of its efforts. The obvious inference is that this is a direct result of a royalty system which is devoid of the necessary monitoring and policing policies and governance.

It is also frequently alleged that, to a large extent, the reason why natural resources are so badly managed in developing countries is because of the lack of knowledge and capacity to properly administer the resources on the part of the officials charged with their management. Ascher (1999, p.28) rejects this argument when he states that not only are such failings inadequate as an
explanation but, further, that “ignorance may well be a strategy and a deliberate outcome of government policy designed to allow certain government officials to evade criticism”. Moreover, following public choice theorists’ assertions regarding vote maximisation, it can be argued that the decision-making process is, in fact, partly or wholly motivated by "a desire to gain political power" (McNutt, 1996, p.8) or the establishment of the means to such power.

The misallocation or misuse of environmental resources is not merely a question of market failure; a range of government intervention policies and general governmental neglect have themselves been the cause of environmental damage (Pearse & Turner, 1990) and the question of how a country with such immense resource potential as PNG can have mismanaged that potential so badly, precipitated environmental degradation on such a vast scale, and provided so little by way of return to its citizens is one which remains a critical issue (Gomez, 2006).

The ultimate responsibility for these failures rests with successive PNG governments. The Asian Development Bank (ADB, 2006) stated that PNG was a country with extensive potential for economic growth, yet the quality of its governance continued to constrain its investment and development opportunities and the standard of governance had been deteriorating gradually since the late 1980s. The results of this deterioration are evident in the decline in the ability to provide basic services, in serious law and order problems, and
in institutional weaknesses which allow corruption to thrive (ADB, 2006).

The ADB describes PNG as a country with a fragile sense of nationhood. Because of the absence of this national conviction of unity there is a very real and present danger in that, unless that attitude is redressed, the likelihood of the country disintegrating into the situation of a failed state becomes greater. There have been several previous instances of partisan attempts for various provinces to secede from PNG. The attempt by Francis Ona and the BRA in 2004 to establish Bougainville as a separate nation/kingdom is one example. The failure of that attempt at the time does not, however, obviate the possibility of Bougainville yet seceding from PNG.

There coincided with the efforts of Ona and the BRA at the time, an effort by the United Nations and the Australian and PNG governments to establish an autonomous and democratically elected government for Bougainville (McLeod, 2005). The result of elections held subsequently as a consequence of those international efforts saw the election of a new president for the Island, the choosing of a new flag and anthem for the Island, and the prospect of a referendum to be held in 10 to 15 years on the question of whether the Island would totally secede from PNG and assume total independence (Jones, 2005).

Such efforts and internationally supported elections can only encourage other groups to think in a similar fashion and to be seen to be encouraging further provincial attempts toward secession. At the least, it could be seen to detract
from a universal commitment to a nation-building effort on the part of the
government and people of PNG. This general commitment to national unity
on the part of the people of PNG is an essential requirement if the people are
ever to jointly hold their government accountable for its actions and policy
failures - including those affecting the environment. Any such thinking on the
part of the populace or provincial governments can only be detrimental to
environmentally-protective efforts.

In May 2006, following the failure of its political, military, and policing
systems, PNG’s near neighbour, East Timor, had become a failed state
requiring the intervention of a significant Australian military presence in order
to re-establish peace and law and order and a basis for orderly administration
(Kelly & Walters, 2006). Following the re-establishment of order and the
appointment of Jose Ramos Horta as Prime Minister to replace the inept Mari
Alkatiri, Mr. Ramos Horta took the regrettable (but all too common in such
situations) step of criticising the very intervention by Australia which
facilitated his appointment, the re-establishment of order within his country,
and the avoidance of the deterioration of the situation into civil war.

Whilst not apparently as critical, the conditions which pertain in PNG bear
strong similarities to those which existed in East Timor prior to the
international intervention. The open rivalry between clans; the patent failure
of governments and their administrative and developmental policies; the
growth in lawlessness and the deterioration in the county’s ability to control it;
the requirement for, and intervention of, Australian police and advisory facilities; and the open criticism by the PNG Government of that very intervention which continues to support its existence, the establishment and its right and propensity to issue such criticism is to name but a few indicators of imminent or pending political disorder.

However, as stated previously, the focus in examining government policy failure is that of its failure to serve the interests of the nation in maximising the economical and societal benefit of the country’s natural resources. While recognising that the policies - and the administration and success or failure of those policies - are determined and driven in PNG, as in any other country, by politicians; it is not to say that policy failure can not be redressed by creating conditions which provide a basis for improved governance and policy success.

As in any democracy, the elected representatives may have different economic objectives such as the promotion of particular projects, or the redistribution of economic benefits and these objectives will frequently conflict with those of other representatives or government officials. These objectives can also include political motives such as capturing a greater degree of control over the uses of the financial resources thereby enhancing the standing and power of a particular instrumentality (Ascher, 1999). Such objectives may also be devoid of intentions to provide personal financial gain to the officials or politicians themselves. Nevertheless, they may strive to control the determination and allocation of state financial resources for reasons contrary to the interests of
the state and its people which can not do other than precipitate failure of stated policy on an ongoing basis.

5.2 Corruption

The reasons which are most often propounded as to why inefficient administrative and monitoring practices are condoned relate to greed and incompetence and the poor conduct of resource exploitation is not only caused by government policy deficiencies, but that such deficiencies can induce or even force such conduct (Ascher, 1999). This view is supported by Livingstone (1989) in as much as he is of the opinion that, while developing countries may be potentially relatively wealthy in terms of resources, a failure on the part of these countries to translate this potential into a high per capita income is often the result of government imposed failure in terms of national infrastructure failure and instances of corruption on the part of government officials.

With the demonstrated and explainable propensity which government officials and politicians in PNG have to focus on the achievement of short-term objectives; the control and administration of the mining activity in remote and inaccessible areas and its impact on the environment appears to be, and to have been, regarded as too difficult and too long-term to warrant any prolonged or serious attempt to master the complexity of the problem.

Moreover, it is often the case that manipulation of the natural resource
exploitation process is relatively simple because the distortion appears to carry a low likelihood of political cost - the current losers from resource exploitation manipulation tend to be the poor with few political resources available to them and the losers in the future will be the future generations (Livingstone, 1989). There are also many other financial resources related to the exploitation of the natural resource wealth available for manipulation such as the funds of central treasury, of the resource extractors, of the consumers, funds from government grants and funds from international loans. The availability and access to these funds and the endemic accountability evasion in PNG contributes to corrupt practices in the funds administration.

Corruption in PNG and neighbouring countries tends to be complicated (at least in its interpretation) by defensive or obfuscatory claims of traditional behaviour and the assertion that gift-giving is a traditional Melanesian political activity (Larmour, 1997). However, despite the difficulty sometimes experienced in identifying or classifying behaviour as ‘grand’ corruption (i.e. the use of public office for private gain), the implied interpretation of corruption is often made by sections of the electorate in PNG by reference to egalitarian traditions and an aversion toward, and suspicion of, accumulation (ibid.).

Nevertheless, and referring principally to the findings of the 1989/1990 (Judge Thomas) Barnett Commission of Inquiry established by the then prime minister, Paias Wingti, Larmour (1997) quite explicitly states that politicians
and public servants in PNG have used their public office for private gain by seeking and accepting bribes for themselves and politicians seeking funds for the respective political parties.

The Barnett Commission of Inquiry uncovered corruption on a huge scale including rampant evasion of corporate taxes (Dauvergne, 2001). Thompson (1994) also noted in the same context, inter alia, that the forestry industry in PNG was rife with corruption, legislatively naive, bereft of any policy, and the responsible department demoralised and staffed by officers supported by the very companies which they were charged to monitor.

The PNG Prime Minister, Sir Michael Somare, also went on the defensive at the APEC forum in November 2004 regarding gift-giving in PNG when he disputed its interpretation by Western countries as bribery. He inferred that to so interpret such actions was to misunderstand the Papua New Guinean people (Niesi, 2004).

The matter of corruption in PNG public and political life has been addressed in various attempts to stamp out such transgressions. In another such attempt in 2004 the Ombudsman Commission began examining relevant provisions of the Constitution with a view to enabling the changes necessary in order to eliminate corruption. However, in so doing, the Commission using a strange circular argument criticised, inter alia, the lack of adequate funding, a dearth of both proper funding and staff, and a general surge in corruption as obstacles
to completion of its task of corruption elimination (Rheeney, 2004). The PNG Internal Revenue Commission, also in 2004, issued a call for departments and statutory bodies to establish internal divisions in order to fight corruption (PNG Post-Courier, 30 Sept. 2004).

Referring to the work of investigative journalist for *The Times of Papua New Guinea*, Sinclaire Solomon, Joku (1995) states that Solomon’s investigations into the logging industry in PNG exposed a vast level of corruption which led to a public outcry and the establishment of the Barnett Commission of Inquiry. Hughes (2002) was forthright in her interpretation of the distribution of the billions of dollars of Australian aid granted to Papua New Guinea since it achieved its independence when she stated forthrightly that a significant proportion of those funds had been stolen.

She went on to say that, not only were the aid funds dissipated by incompetence and corruption, but also the very taxes collected on the production of minerals in PNG – the subject of the grant of exploitation licences by the PNG Government and its ministers – became victim to the activities of successive PNG governments which, she said, spent like drunken sailors on projects that lined their own pockets for over 20 years. The abundant mineral wealth of PNG and high levels of foreign aid received by PNG over the years since independence precipitated windfall incomes which led to waste and corruption (Windybank & Manning, 2003). Moreover, Windybank & Manning stated that the practice adopted by Australia of
providing generous assistance to PNG even in the context of the existence of rampant government and administrative corruption while refraining from dictating the circumstances for the administration of the aid has been a failure. Filer et al. (2000) argue that the enormity of the Australian aid programme and the fact that it constitutes grant aid without conditions other than it be largely spent on Australian consultants allows the PNG Government to evade many of its undertakings in regard to development and the PNG chapter of Transparency International (2003) stated that despite its natural resource wealth PNG’s development has been undermined by wide-spread corruption with monies intended to be used for social services being stolen by unscrupulous politicians and public servants.

This situation was exacerbated at the end of 2004. The Australian government, in an effort to augment some of those areas of governance in PNG which were deemed to be weak, and in co-operation with the PNG government, embarked on the Enhanced Co-operation Package (ECP) at a proposed cost to the Australian taxpayer of A$1.1 billion over a period of five years (Callinan, 2004).

The particular focus of the ECP was in the area of administration of justice and government management procedures with approximately 200 Australian police officers and 70 Australian senior public servants working alongside their PNG counterparts. The programme was generally welcomed to the extent that former Prime Minister and opposition leader, Sir Mekere Morauta,
viewed the further assistance as necessary and felt opposition and resistance to the programme were manifestations of denial on the part of PNG leaders of the depth and gravity of the problems which challenged PNG (PNG Post-Courier, 7 Dec. 2004).

The ECP was undertaken in the context of endemic corruption and an epidemic of lawlessness and terror exercised by uncontrolled 'raskol' gangs whose members viewed crime as an occupation and an acceptable way of life and who professed a readiness to shoot and kill members of the ECP (Callinan, 2004)

However, despite the huge cost and intensive nature of the logistics of the ECP, a campaign of rumour-mongering, suggestions of the possibility of PNG sovereignty compromise, inferences that the ECP was a cover for Australian espionage activities, and legal challenges to the legitimacy of the ECP threw into question the viability of the programme while only yet in its infancy. Suggestions made included the assertion that the opposition to the ECP was the result of concern over the allegation that it might be failing and, conversely, that it was successful to the point that its investigations into corruption in high places were beginning to bear fruit to the point of causing severe discomfort in certain areas (Patience, 2005 b).

A legal challenge to the ECP was quickly initiated in the PNG Supreme Court by a former provincial governor and acting judge, Luther Wengte, with the
immediate result of hindering the day-to-day conduct of the ECP and throwing the concept as a whole into doubt. This action was accompanied by threats of illegal strikes by hundreds of PNG police unless the programme was aborted (Rheeney et al., 2005).

These strikes followed shortly on the release of the results of an administrative review of the Royal Papua New Guinea Constabulary which found overwhelming evidence of corruption in the force. In presenting the review report to the PNG Parliament in March 2005, the Internal Security Minister, Mr. Bire Kimisopa told the parliament that apathy and corruption was rampant in the police force along with complacency, incompetence, and insubordination. He stated that the very institution vested with the primary responsibility of enforcing the law was teetering on the brink of collapse (Rheeney & Orere, 2005) which bears out the concerns addressed by Windybank & Manning (2003) among many who predicted chaos spreading to other parts of the country and administration.

Nevertheless, on Friday, 13th May 2005, the PNG Supreme Court unanimously ruled that certain provisions of the act of parliament which established the ECP - namely those which granted immunity from prosecution for Australian police and officials - were inconsistent with the PNG constitution. The result was the immediate cessation of all duties of the police and officials seconded by Australia for duty in PNG. Mr. Wengte, when interviewed after the delivery of the judgement, expressed the expectation that
future assistance should be in the form of logistical support which would include vehicles, firearms, and other equipment (Skehan, 2005). His expectation is symptomatic of the naive arrogance of those who believe in a right to assistance from the Australian Government and Australian taxpayers without a corresponding responsibility to account for the manner in which that assistance is administered.

In October 2004 Professor Allan Patience, head of the University of Papua New Guinea's Political Science division, labelled PNG politicians political pimps and parliamentary fools for their failure to design and implement policies which would benefit the Nation. He expressed the opinion that money and corruption had destroyed the country and he decried the wide use of 'slush funds' by politicians at times of elections to bribe voters with "depraved inducements" which, he said, constituted the prostitution of Papua New Guinean democracy (PNG Post-Courier 20 October 2004).

Serious problems of governance and corruption continue to hamper development in PNG (World Bank, 2006). Despite the enormous sums of aid money distributed by Australia and others to PNG, Port Moresby is rated as one of the most 'unliveable' cities in the world and the government elites - those who ensure that they are the principal beneficiaries of the international aid - live behind barbed wire and send their children to Australia for their education (Hughes, 2006).
The level of open acceptance of corruption is such that in 1998, to ensure support for the 1999 budget the then prime minister, Bill Skate, issued an ultimatum to his ministers that they either choose to support the budget or they would lose access to development funds; in other words, they would lose their ‘slush funds’ (Pitts, 2002, p.40). The following year, on 17 September 1999, the then Prime Minister, Sir Mekere Morauta, told the PNG parliament that the antics of PNG politicians had brought ridicule to the country and stated that the PNG economy was being destroyed by a combination of incompetence and corruption (Asia Times Online Co., Ltd.).

Yet less than three months later, on 30 November 1999, the same Prime Minister emulated the conduct of his predecessor in permitting the country's politicians to retain their slush funds (known as Rural Development Funds) in order to effect the passage of the 2000 Budget (Pitts, 2002). There followed widespread condemnation of the action from NGOs, public figures, and international business.

In spite of all such condemnation Sir Robbie Namaliu, another former prime minister of PNG, was quoted by the PNG Post-Courier (23 October 2000) as stating that despite the uncovering of massive scandals involving state-owned corporations and institutions over the previous five years, no one would be prosecuted and he called for the establishment of a permanent independent anti-corruption commission to restore public confidence in government.
It is clear, therefore, that PNG is a country with a political system which encourages instability and corruption. The accrual and dispensing of largesse by politicians creates a situation which depicts the PNG bureaucracy as highly politicised and infused with endemic corruption (ADB, 2006). One effect of this is a body of politicians with very short-term goals. PNG is similar to "many other resource-rich and capacity-poor economies where policy and institutional weaknesses have facilitated rent-seeking behaviour by public officials, led to pervasive corruption in public administration, and weakened confidence in government" (ADB, 2006, p.6) and that the relevant agencies lack the political will to fight corruption.

In *The Australian* (June 14, 1995 p.17) PNG’s Governor General was reported as warning of the possibility of greed and corruption becoming deeply embedded in Papua New Guinean society. The provincial government system, introduced in 1976 with the establishment of nineteen provincial governments, was shortly thereafter forced into suspension as a result of mismanagement or corruption and was radically modified by the 1995 Constitutional Review Commission (the Micah Commission) ((Lipscomb et al. 1998).

The conduct and attitude of successive PNG governments, moreover, in their greed, sloth, sheer incompetence, and outright corruption precipitate a feeling of victimisation on the part of the citizens who then copy the behaviour of their leaders in an effort to better their own lot in life (Pitts, 2002). Their
behaviour manifests itself in crime, corruption, and low productivity and they distance themselves from state process and state-driven crime control strategies. It is not the system of government which renders good governance elusive, however, but rather the conduct of senior bureaucrats and politicians and political interference in the administration of the public sector (Donigi, 1998).

Yati Bun, the former chairman of PEAK and executive director of the Foundation for People and Community Development, an NGO based in Port Moresby, in 2002 accused PNG public servants of having changed their mentality and focus from that of service to the public to an attitude of service to themselves. He regretted the fact that, throughout the government sector, one could not expect to achieve any objective unless compensation was provided to the parties concerned and he cites several exacerbating aspects to the problem of corruption in PNG. Of particular concern in his view are political parties and individual politicians in PNG being dependent on private donations for their funding with public disclosure on the source of these funds and the manner in which they are used being totally absent. The incidence of political appointments among senior public servants and the fact that a new minister will frequently dismiss the previous incumbents to make his own appointments were also prominent among his concerns and he decried the fact that, in circumstances of allegations of corruption, a leader may resign and even if prosecuted and found guilty, the maximum penalty is only a three year ban from office. (Bun, 2002).
Chapter 6  Conclusion and Recommendation for Further Study

As stated at the outset, PNG has many policy instruments which are designed to provide a model of environmentally sustainable development and to provide a system of monitoring and control of that development. However, despite such instruments, the PNG Government has failed to demonstrate a willingness to assiduously address environmental problems - much less a willingness to deal with the widespread environmental degradation which has resulted from, and is exacerbated by, that very policy failure.

This administrative, policy, and governance failure is a function, as has been seen, of several factors. At a fundamental level the requirement to monitor and police environmental undertakings and responsibilities of mining operations based in highly inaccessible and mountainous locations is a hugely difficult and costly exercise. That that requirement is the responsibility of consecutive governments which, while paying lip service to the concept, seem devoid of the political will to ensure its execution makes the likelihood of any genuine attempt at proper environmental governance, at best, slight.

The position in PNG is exacerbated by the total absence of government services in many areas. In some regions, travel is made almost impossible by roads in a state of disrepair and the likelihood of armed robbery of travellers. Political wrangling is made worse by fraud and a frequent inadequacy of funds to pay staff in regional administrations. Reducing administrative and
financial assistance from central government to rural regions precipitates a vicious cycle in continuing migration of unemployed and uneducated persons into urban areas, particularly to the capital, Port Moresby, which in turn adds to the already growing unemployment and lawlessness in the cities. Corruption flourishes with daily reports of abuse of power by politicians and bureaucrats and researchers believe that less than half of the crimes committed are reported to police. In all of this the benefits of cheating and fraudulent activity are reinforced in an already cynical population which largely regards the legal system as irrelevant (Pitts, 2002).

The degradation of the environment is, as we have seen, a function of governmental failure, market failure, and widespread poverty. The failure to recognise the environment as a capital asset to be protected for the future is due to the common property nature of the environment leading to degradation and depreciation of the environment (Sathiendrakumar, 2006).

In a practical sense the levels of corruption which have been identified; the parlous nature of the occupational tenure of politicians and administrative officials; the extreme difficulty in accessing mine sites for monitoring and policing due to the state of disrepair of the road system; and the very real dangers to life and limb as a result of the likelihood of armed robbery renders the question of environmental degradation of little or no importance to those charged with the protection of the environment.
Failure to prevent such degradation has a flow-on effect which adds to the resource depletion and such depletion cannot be justified by the societal gains achieved as a result. The ignorance, incompetence, inefficiency, and administrative weakness which contributes to the degradation may even be the intended result of government policy in order to provide a level of protection for officials from criticism (Ascher, 1999 p.28).

However, it is clear that such policy failures are not simply the results of ignorance of the situation or incapacity to address remedial options. The evidence deduced regarding the parlous nature of the PNG economy also supports the premise that a strong motivator in this government decision-making process regarding resource exploitation – and possibly a contributing factor in the inefficiencies evident in that function - is, in fact, a desperation precipitated by a pincer effect of a declining economic performance and diminishing tax receipts coupled with that of an ever-increasing requirement for government revenues.

In Papua New Guinea minerals constitute a greater component of national exports than most other Pacific Rim countries and this has precipitated a powerful incentive for successive PNG governments to ensure the implementation and continuation of resource projects. The development of natural resource projects in order to provide continuing inflow of national revenues has become central to the ongoing provision of the basic elements of governance and the public service in PNG (Howitt et al., 1996). There is an
understandable perception on the part of the government that rigorous monitoring and policing of mining activities and restriction of activities which cause damage to the environment jeopardise the continuing flow of government revenues from the mining industry.

A major motivator in the neglect of remedial attention to environmental degradation - either by government sanction or by government toleration, i.e. by commission or by omission, - which has taken place in the mining industry is the result of a desire on the part of government to not only ensure the continuation of mining royalties and revenues but to maximise those revenues from the industry.

During the period of the 1980s, mining was both the most visible economic sector in PNG and that which was most responsible for setting the swings of the internal business cycle from exploration to exports (Thompson & MacWilliam, 1992) and as a result received the most direct government attention both from the point of view of facilitation of the activity and of ensuring maximisation of the revenues.

The very fact of the 'openness' of the PNG economy, in terms of the high levels of imports and exports relative to the country’s GDP, exacerbates the negative effects on economic performance due to any external shocks to PNG's primary commodity exports, such as a decline in FDI, on which the economy is so heavily dependent (Rahland and Ecevit 2002). The recent
external shocks felt by the PNG economy have been a result of the diminishing attractiveness of the country as an international investment destination. This has occurred for various reasons - not least of which is the growing lawlessness of the country and growing perceptions of defensiveness on the part of the government to international criticisms. These events have so dramatically affected the political and economic structure of the country as to prompt Windybank & Manning (2003) to suggest that PNG is in grave danger of succumbing to economic paralysis, government collapse, and social despair. While it is not within the ambit of this examination to pursue; it is relevant to observe that there appears to be a progressive relationship between the obvious breakdown in law and order within PNG and the continuing deterioration in the environmental standards and safeguards.

It would appear, therefore, that the causes of the policy failures in the instance of the mining industry in Papua New Guinea are a combination of

1. government and individual officials’ incompetence;

2. monitoring and policing difficulties due to the remote locations of the mining activities exaggerated by the neglected and precarious nature of the country's infrastructure;
(3) Greed for the capture of potential revenues to be generated both nationally and provincially, and for the benefits potentially to be had by control of the decision-making process;

(4) Endemic corruption which focusses politicians' and officials' attention on ignoring that which is likely to diminish the source and means of their own self-service; and,

(5) The potential pursuit of other economic programmes perceived to be facilitated by the environmental neglect involved in that activity.

There is a general and understandable distress on the part of PNG citizens at the patent lack of a form of government which provides trustworthy, transparent, and firm leadership with consensus of vision to tackle social and economic obstacles. Whether, in light of the evidence presented in this thesis, there is a possibility of reorientating the political, legal, and social climate in PNG in order to facilitate that leadership of trust, confidence, and integrity and thereby obviate the dissipation of the riches of the country and its environment is an aspiration which is, at best, questionable.

The development initiatives in PNG, either of government programmes or community-based programmes, are dependent on aid for their funding and direction (Pitts, 2002). The habitual dissipation of substantial and continuing financial aid from Australia and world organisations not only causes further
distress on the part of the PNG people but also raises questions - if not of the likelihood of the continuation of such assistance - at least of the likelihood of its continuation with its distribution unfettered by regulatory and administrative controls.

Despite the implementation of such programmes and their enormous cost and despite the fact of contributing the equivalent of 20 per cent of the national budget of Papua New Guinea in the year 2003-2004 (AusAID, 2004), neither that body (AusAID) nor the Australian government has been given - nor has it as yet insisted upon - the right to determine or oversee that its taxpayers’ funds are spent efficiently. The extraordinary degree of sensitivity demonstrated by this fact on the part of donor governments and apparently driven by an aversion to the possibility of accusations of neo-colonialism or inferences of political callousness, cannot be seen to be other than having a serious contributing influence toward the maintenance and aggravation of existing levels of inefficiency and corruption. Moreover, such reticence can only be seen as being conducive to an emboldening attitude on the part of those who allege ulterior motives in the granting of such aid and to a strengthening in the demands for such aid to be granted without constraint as to the manner in which it might be expended.

It can be argued that all such sensitivities are, and will be, in vain since any activity on the part of any government involved in grant aid will attract criticism in regard to some aspect of that activity. A case in point is the
somewhat facile and unsupported condemnation of AusAID assistance to PNG of those such as the Australian academic, Tim Anderson (2004), when he refers to cynicism and self-interest as being the motivators in Australian foreign policy toward PNG which he claims is symptomatic of an effort by Australia to push a new colonial agenda. It should be expected, however, that any attempt to monitor or fetter the distribution of huge amounts of aid in a political and economic climate riddled with corruption will be expected to meet with cries of indignation and accusations of colonial patronising.

It is more cogently arguable that PNG, having received c.$15.5 billion in aid funding since 1970⁶, is now facing greater social, economic, administrative, and environmental difficulties than it has since achieving its independence in 1975. The legacy of the colonial period, terminated as a result of international pressure amid those very accusations, was rather a deteriorating, fragmented, and inadequate governance with the political and legal systems being managed by a mere one per cent of the population and that political fragmentation was reinforced by the increasing occurrence of tensions between provincial and national politicians (Pitts, 2002).

There is a great diversity of problems faced by PNG on its path to self-sufficiency and economic prosperity. These include, but are not limited to, the very question of enforcing a rigorous regimen of environmental

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protection - the absence of which is demonstrated in Chapter 4; the building of an arterial infrastructure capable of serving and interconnecting the growing nation's requirements; the establishment of an effective and competent bureaucratic administration; and the elimination of the country's endemic corruption and lawlessness.

The question is open to examination as to whether there can be any hope or expectation of resolving these enormous problems without the imposition of some system of monitoring, reporting, and accountability in regard to the enormous amounts of aid annually provided to PNG. The associated matter of the possibility of potential culpability on the part of the foreign governmental aid-givers – principally Australia – from the point of view of the manner and ease with which these aid funds were granted should also be addressed. The fact of this mode of granting aid without an effective requirement - or, indeed, mechanism - for any realistic monitoring of the way in which the funds were distributed, cannot be other than a very real and tangible contributing factor in accountability evasion on the part of government members and officials charged with the management of the funds received.

It would have been, in the initial years of the granting of the aid funds, deemed condescending by the aid givers and, in modern parlance, politically incorrect to subject to scrutiny and audit the internal administration and manner of distribution of the aid granted. This view pertained because of the
fact that the administration of the aid funds received was conducted by a sovereign national government and its officers. That perceived impediment to scrutiny – and, indeed, to the provision of any assistance in the administration of the funds - was exacerbated by the fact, and the attendant perceptions and misperceptions, of the relatively recent colonial history of PNG.

Nevertheless, to have simply handed out and to continue to deliver enormous levels of funding to successive PNG governments not only bears closer examination but also cannot be other than a contributor to the mismanagement and misuse of those funds. That such a situation should continue in an environment which is conducive to its further propagation is arguably an even greater betrayal on the part of the donor governments in the name of humanitarian aid. That that aid might, in any way, be regarded as a salve for the conscience of the donor governments compounds the omission rather than contributing to its amelioration. Professor Hughes, in another paper on the subject (2003), states that AusAID’s administration function in the Pacific is crippled by virtue of being constrained from expressing its views as to the likelihood of the success of its aid. As illustrated in Section 1.3, Gupta et al. (2004) demonstrated that for every extra aid dollar received by an aid-dependent country the recipient government raises 28% less in tax and the more corrupt the country the more that country's revenues decline as the aid it receives increases. The question of aid and its delivery, particularly in this context, is a matter worthy of further investigation.
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